FDL-3105

SERVICE **MANUAL**

US Model

color
watchman

SPECIFICATIONS

TV standard	American TV standard
Color system	NTSC
Channel coverage	VHF channel 2-13 UHF channel 14-69
Radio frequency range	FM: 87.6-108 MHz (Stereo). AM: 530-l ,710 kHz (Mono)
Antenna	VHF/UHF/FM: telescopic antenna AM: built-in ferrite bar antenna
Display	TN LCD/TFT active matrix method Effective picture-element ratio: more than 99.99%
Picture size	3-inch picture measured diagonally
Speaker	36 mm (1 7/16 inches) dia.
	EXT ANT: minijack, impedance 75 ohms (for TV/FM-radio) A/V IN: tripolar minijack, impedance audio 47 kilohms/ video 75 ohms
output	(headphones): stereo minijack, impedance 8-300 ohms
Power requirement	9 V DC, See "Power sources". (page 3)
Battery life	See "Power sources".
Power consumption	3.8 W (9 V DC) AC adaptor use
Dimensions	Approx.l13.6 x 166.1 x 60 mm (w/h/d) (4 1/2 x 6 1/2 x 2 3/8 inches) incl. projecting parts
Weight	Approx. 0.58 kg (1 lb 4 oz) incl. batteries Approx. 0.45 kg (1 lb) excl. batteries

Accessories supplied

AC power adaptor (1), Sun shade (1), Carrying pouch (1)

Optional accessories

Alkaline battery	size AA (LR 6)
AV cord	AVK-715M
Car antenna	VCA-9E
Headphones	MDR-34
Car battery cord	DCC-E190L

Design and specifications subject to change without notice.

LCD COLOR TV-AM/FM STEREO TUNER

SONY®

MICROFILM

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ℃ during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Features

. The LCD (Liquid Crystal Display) provides clear pictures and natural facial color tones.
. It is used as an AV (audio/video) monitor.
. The voltage synthesizer tuning system allows easy tuning.
. Grip and stand are provided for convenient use.
. The new power circuit and fluorescent lamp provide long battery life (approx. 5 hours with alkaline batteries).

Note to CATV system installer in the U.S.A.:

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

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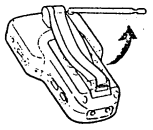
Power Sources

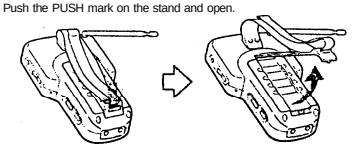
Batterie

Insert six size AA (LR6) batteries (not supplied).

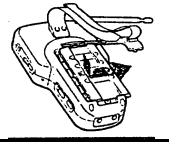
1 Raise the antenna from the unit.



2 Push the PUSH mark on the stand and open.

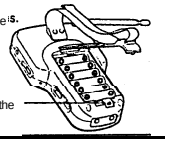


3 Slide the battery compartment lid.

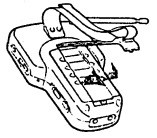


4 Insert the batteries with correct polarities.

Lay the ribbon under the batteries.



5 Reinstall the lid.



6 Replace the stand and antenna.

To remove the batteries

Pull the ribbon. The batteries will pop out of the compartment.

Battery replacement

When the batteries become weak, the unit's protective function will automatically cause the picture to disappear. When you are listening to the radio, the sound may be distorted. When you are listening to an FM stereo program in stereo lhrough the headphones, the sound may become monaural. In this case, replace all the batteries with new ones.

Battery life

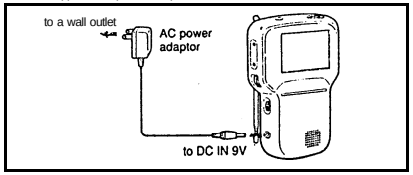
You can use approximately following hours continuously.

Battery	TV	Radio
Alkaline	5	45

The battery life becomes short in a cold place.

Using on House Current (120 V AC)

Use the supplied AC power adaptor.



Notes

- Use only the supplied AC power adaptor. Do not use any other AC power adaptor.

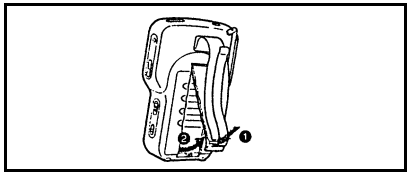
Polarity of the plug.

- When the unit is not to be used for a long period of time, remove the batteries to avoid unit damage caused by battery leakage and corrosion.

Connect the Sony DCC-E190L car battery cord (not supplied) to the DC IN 9V jack. Use only recommended car battery cord. Do not use any other car battery cord.

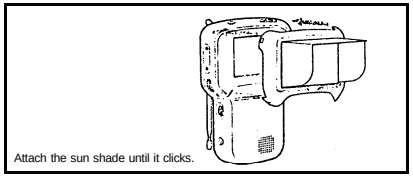
How to Use the Stand

Push the PUSH mark and open the stand.



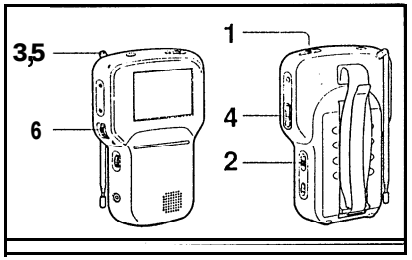
Attaching the Sun Shade

When you cannot view the picture clearly owing to reflected light, use the supplied sun shade.



Attach the sun shade until it clicks.

Watching the TV



1 Select the band, VHF or UHF.

2 Set the POWER switch to TV.
The unit starts tuning automatically.

3 Pull out the antenna fully.

4 Tune in the desired channel.

5 Adjust the length and direction of the antenna.
For UHF, the receiving may be better with the short antenna.

6 Adjust the volume.

To turn off the TV

Set the POWER switch to OFF, and fold down the antenna.

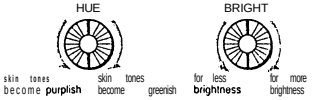
If the channel changes

If the power is momentarily lost because of mechanical shock, or if the unit has passed through a tunnel, the channel may change. If this happens, tune in the desired channel again with CHANNEL +/−.

To indicate the current channel

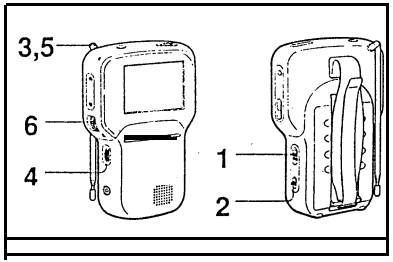
Press the CH (channel) CALL button.
The line (green for VHF, red for UHF) appears at the position of the current channel.

Picture Adjustment



For your safely. do not watch the TV nor operate the controls while driving.

Listening to the Radio



1 Set the POWER switch to RADIO.

2 Select the band, AM or FM.

3 Pull out the antenna fully for FM reception.

4 Tune in the desired station.

5 For FM reception, adjust the length and direction of the antenna.
For AM reception, rotate the unit.

6 Adjust the volume.

To turn off the radio

Set the POWER switch to OFF and told the antenna.

Note

Be sure to turn off the radio after use, especially when listening with the headphones. This prevents unnecessary battery wear.

To listen with the headphones

To listen to the FM stereo programs in stereo, connect the headphones with the stereo miniplug (not supplied) to the Ω jack.

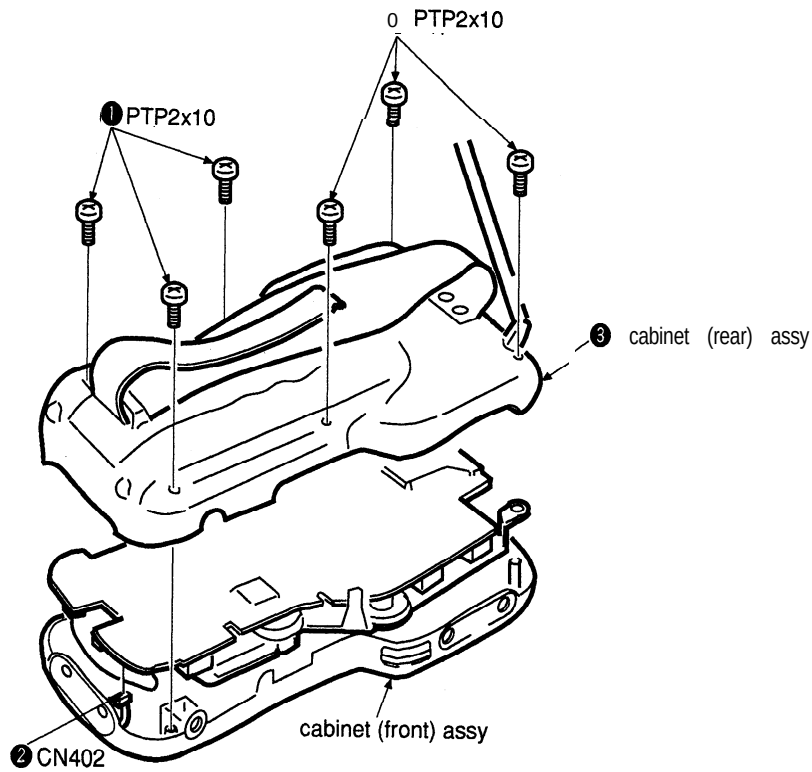
This section is extracted from instruction manual.

SECTION 2

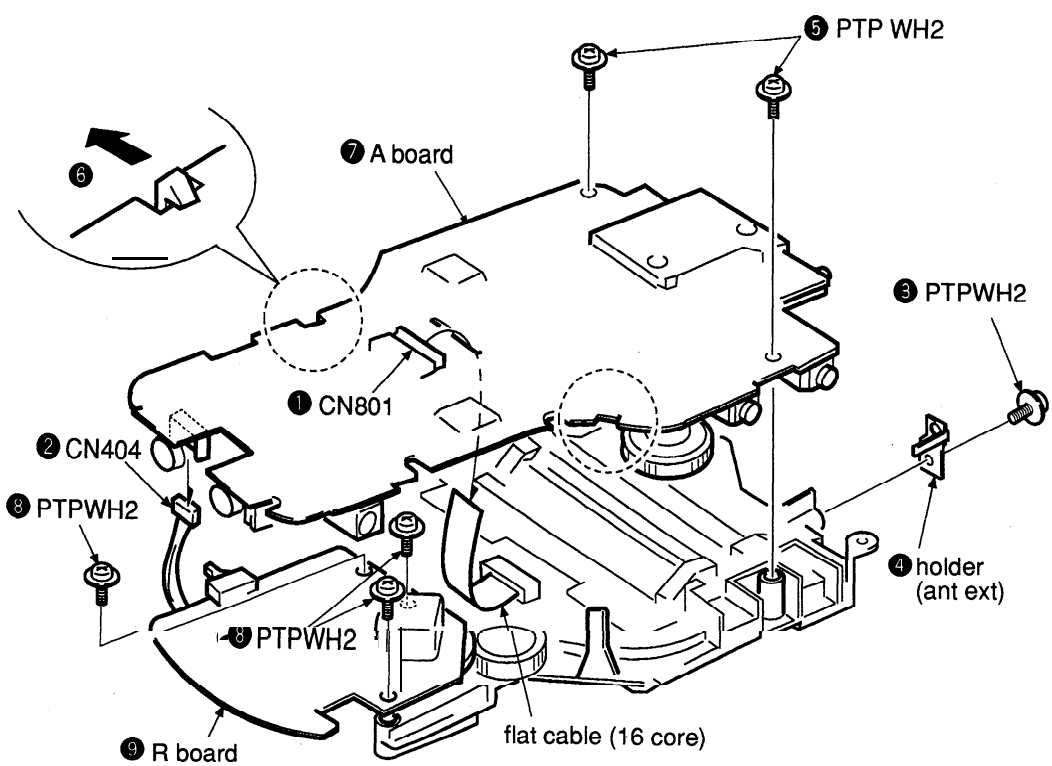
DISASSEMBLY

NOTE : Follow the disassembly procedure in the numerical order given.

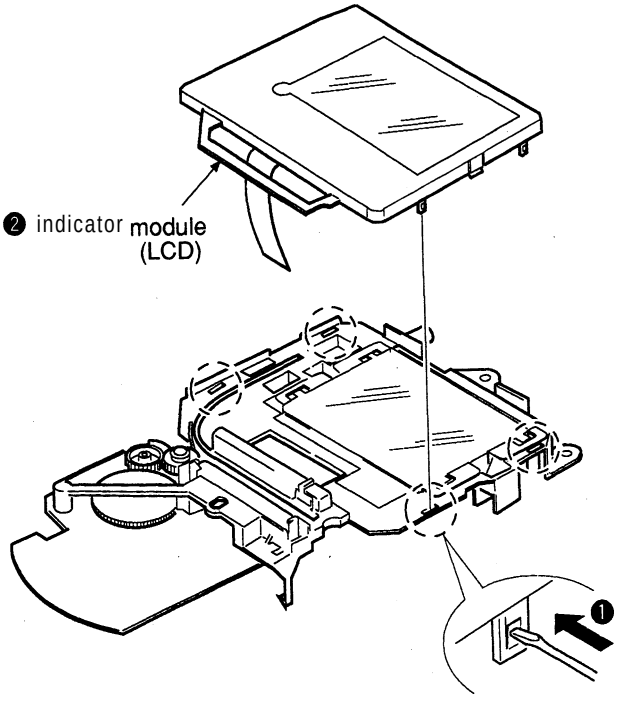
2- 1. CABINET (REAR) ASSY



2-2. A, R BOARDS

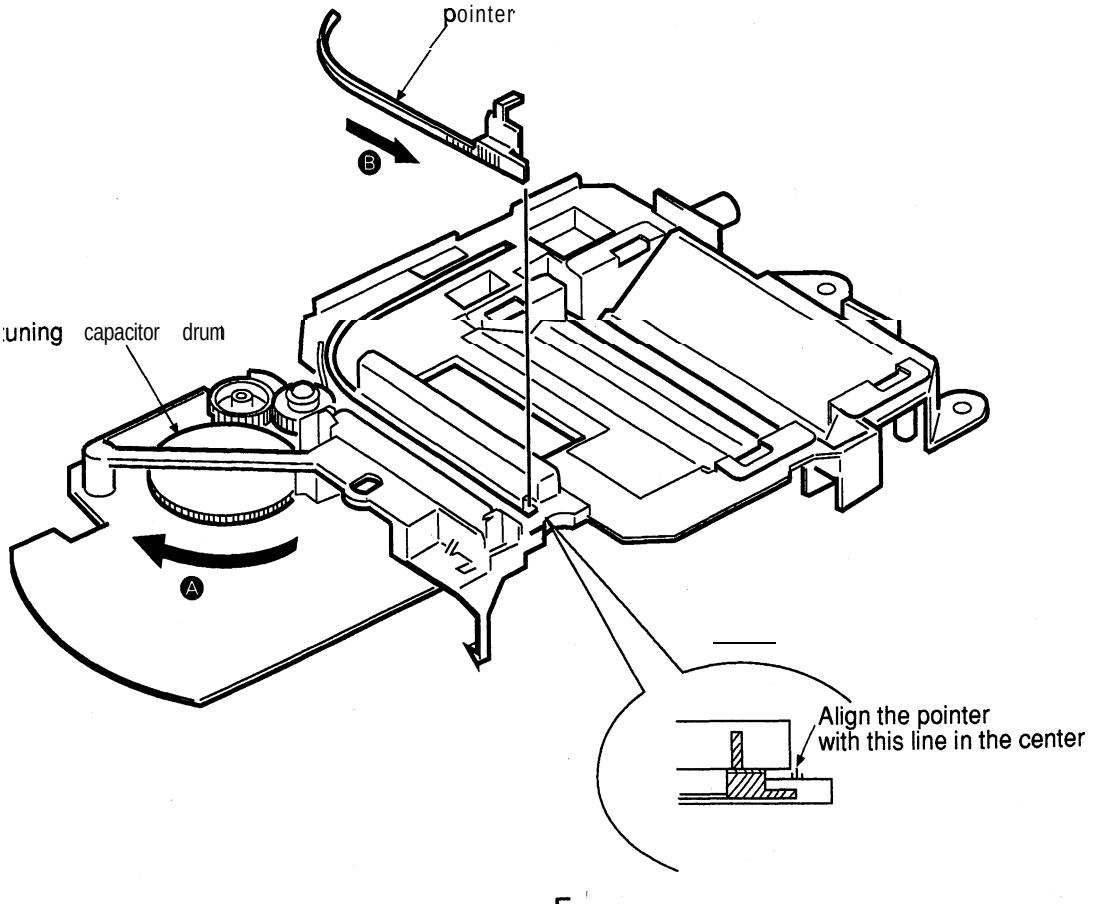


2- 3. INDICATOR MODULE (LCD)



2- 4. DIAL POINTER SETTING

- Fully rotate tuning capacitor drum in the direction of the arrow@. Align pointer to the direction of the arrow Ⓑ and insert it.



SECTION 3
ELECTRICAL ADJUSTMENTS

1. TV SECTION

PRECAUTION

1. Make adjustment in sequence as described.
2. Power supply voltage is + 9.0 ± 0.1V (DC jack end) unless otherwise specified. Power supply shall not be input overlapped.
3. Check the error in waveform and screen for adjustment.
4. Measure a fluorescent tube and an liquid crystal display module device by connecting them with the A board.
5. Unless otherwise specified, input the color bar signal, etc. from A/V IN jack (J301) by using AV-cord (AVK-715M, etc.) to intercept the internal TV detection output. Also, usually use monochromatic gradation wave mono scope with chroma signal OFF.
6. Measuring instruments
   - NTSC pattern generator
   - Digital multitester
   - Oscilloscope
   - Frequency counter
7. Modes of Switches and Control
   S601 (POWER) ·····TV
   S101 (TV BAND) ..... VHF
   RV401 (VOL) ·····minimum

VOLTAGE ADJUSTMENT

Procedure:

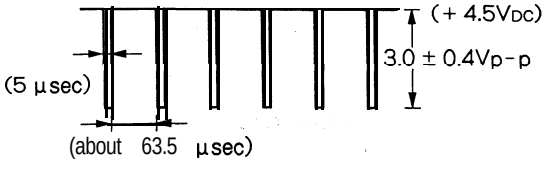
1. Connect a digital multitester between TP213 (+4.2V) and (GND) on the A board, and then adjust RV602 so that the reading of the voltage is + 4.2 ± 0.02V.

Adjustment Location: A BOARD

WAVEFORM CHECK

H pulse check (H cycle)

Connect an oscilloscope to Pin 21 of IC301 (H PULSE) to check if the waveform is as shown in the following figure.

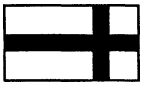


HORIZONTAL AFC ADJUSTMENT

Procedure:

1. Input the pattern generator (monoscope, '75 Ω and 1 Vp-p) to the A/V IN jack (J301).
2. Short TP502 (IC801 pin 10) to GND.
3. The horizontal and vertical synchronization lines start moving.
4. Adjust LV801 so that these lines stop moving.(Refer to Figure 3-2.)
5. Check that the frequency counter connected to TP505 is 15.734 kHz ± 60 Hz.
6. Disconnect the line between TP502 (IC801 pin 10) and GND.
7. Check that the lines are in the display frame and the synchronization is stable.

No good
Fig. 3-1

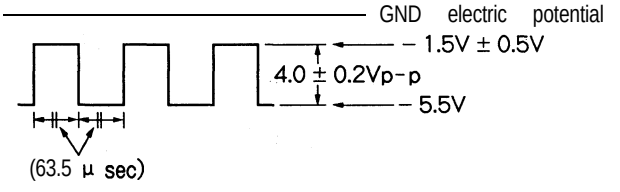

Good
Fig. 3-2

No good
Fig. 3-3

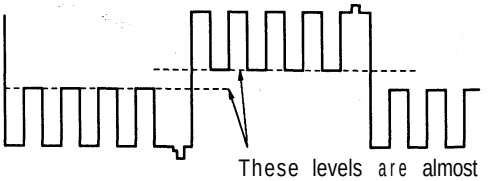
COMMON SIGNAL VOLTAGE ADJUSTMENT and HUE CHECK

Procedure:

1. input the pattern generator (Color chart, 75Ω 1Vp-p) to the A/V IN jack (J301).
2. Common signal check (2H cycle)
   Connect an oscilloscope (DC) to TP513 (COM) to check if the waveform is as shown in the following figure.



3. Check that the blue signal output is as follows. (Chroma demodulation)
   If not, adjust RV306 (HUE Control).

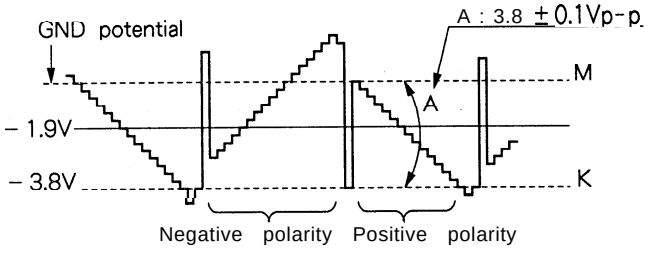

These levels are almost the same.

4. Connect an oscilloscope to the TP304 (IC301 Pin 36) blue output.

CONTRAST ADJUSTMENT

Procedure:

1. Short between IC301 pin-46 and pin-33, and between pin-45 and GND. (Short them at the same time.) Picture will show the white- compressed picture.
2. Input the 5- to 16-step black and white wave (stair-step) of the pattern generator (75 Ω and 1 Vp-p) to the A/V IN jack (J301).
3. Connect an oscilloscope (DC range 1 V/ DIV) to the TP305 (IC301 pin 34) green output.
4. Adjust RV307 (BRIGHT control) so that the black level obtains − 3.8V (line K).



5. Adjust RV301 (contrast) so that the white line obtains the GND potential (line M) (A = 3.8 ± 0.1Vp-p).
6. Disconnect pin 46 from pin 33 of IC301, and pin 45 from GND.

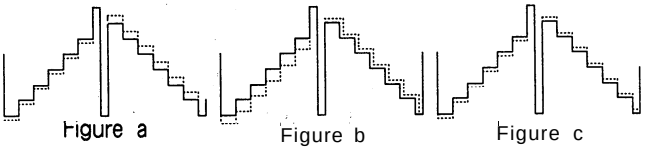
WHITE BALANCE ADJUSTMENT

Note: When performing this adjustment, set the direct current drift adjustment so that the direct currents on each channel of the oscilloscope is stabilized, and use the oscilloscope in this condition.

Procedure:

1. Short between IC301 pin-46 and pin-33, and between pin-45 and GND. (Short them at the same time.) Picture will show the white - compressed picture.
2. Input the 5- to 16-step black and white step wave (stair -step) of the pattern generator (75 Ω and 1 Vp-p) to the A/V IN jack (J301).
3. Connect an oscilloscope (CH1) to the TP305 (IC301 pin 34) green output and (CH2) to the TP504 (IC301 pin 32) red output.
4. Turn RV308 (SUB CONT R) to adjust the red gain so that the positive polarity red signal step wave coincides with the positive polarity green signal step wave on the oscilloscope.
5. Connect an oscilloscope (CH1) to the TP305 (IC301 pin 34) green output and (CH2) to the TP (IC301 pin 36) blue output.
6. Turn RV309 (SUB CONT B) to adjust the blue gain so that the positive polarity red signal step wave coincides with the positive polarity green signal step wave on the oscilloscope.
7. Disconnect pin 46 from pin 33 of IC301, and pin 45 from GND.

The positive polarity signal and the negative polarity signal may not simultaneously coincide due to the variation.(Figures a and b)
In this case, adjust these signals to an average value. (Figure c)



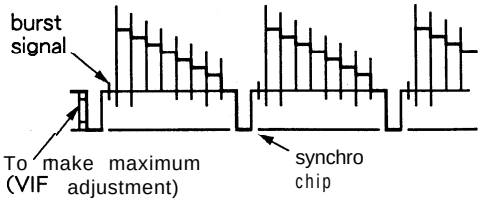
VIF ADJUSTMENT

Note: These adjustments are not performed usually. Never touch CT201 of adjusting device. While, only when CT201 have been replaced, make the following simple adjustment.

− Simple adjustment −

Procedure:

1. Input the monochromatic gradation wave from EXT ANT IN jack (J101).
2. Connect an oscilloscope to Q314 emitter.
3. Adjust CT201 so that the synchro signal is maximum (VIF adjustment).
4. Receive the broadcasts of 2 to 13ch, and check if the screen is colored after the synchronism is stopped with each channel.



AGC ADJUSTMENT

– Simple adjustment –

Procedure:

1. Receive the TV broadcast.
2. Turn and adjust RV201 so that the snow noise is shown.
3. Reversely turn and set RV201 to the point where the snow noise disappears.
4. Receive the broadcast for each channel, and check if there is not beat image distortion of snow noise caused by mixed demodulation.
5. If there is beat and image distortion of snow noise, readjustment the RV201.

– Adjustment using SSG –

1. Input the monochromatic gradation wave to the EXT ANT IN jack (J101).(57 dBμ, 75 Ω terminator)
2. Receive the VHF- high band. (US, channel 9)
3. Connect a digital multitester to pin 2 of IC201.
4. Adjust RV201 (AGC) so that the Volt is 1.770 ± 0.03 V.

TUNING ADJUSTMENT

Procedure:

1. Short S104 (CH CALL).(State where the green display bar is shown on the screen.>
2. Receive the broadcast of 2ch by pushing S102 (CHANNEL −) or S103 (CHANNEL +).
3. Adjustment RV103 so that the display bar is corresponded to the position of 2ch.
4. Receive the broadcast of 13ch, and adjust RV101 so that the display bar is corresponded to the 13ch.

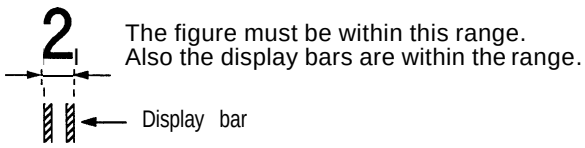
Note: Since. the items 3 and 4 will interfere each other, the adjustment is necessary for 2 to 3 times.

5. Receive the broadcasts of 2, 6, 7, to 13ch, and check if the display bar is corresponded to each channel.
6. Set S101 (TV BAND) to the UHF side to check with the screen if the display bar was turned red.
7. Receive the broadcast of 14ch, and adjust RV104 so that the display bar is corresponded to the position of 14ch.
8. Receive the broadcast of 69ch, and adjust RV102 so that the display bar is corresponded to the position of 69ch.

Note: Since the items of 7 and 8 will interfere each other, the adjustment is necessary for 2 to 3 times.

9. Receive the broadcasts of 14, 30, 40 to 69ch, and check if the display bar in corresponded to the position of each channel.
10. Disconnect the S104 shorted in the above item 1.

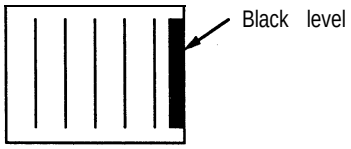
Adjustment specification:



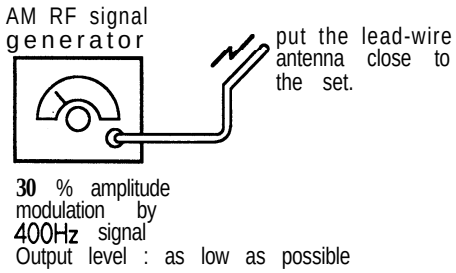
FLICKER ADJUSTMENT

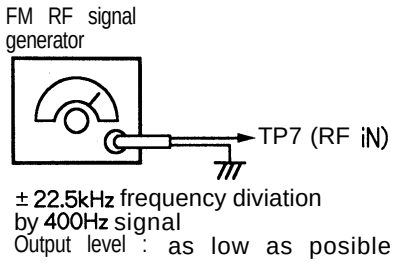
Procedure:

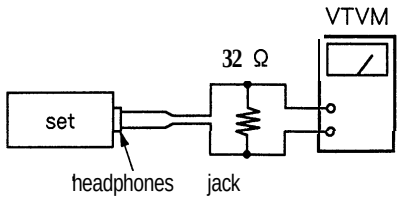
1. Input the lo-step black and white wave step wave of the pattern generator (75 Ω and 1 Vp-p) to the A/V IN jack (J301).
2. Adjust RV307 (BRIGHT control) to display all the steps with good balance.
3. Watch the black level of the screen from the front. When RV304 (common signal voltage) is turned, monitor changes from white→black→ white. Adjust RV304 to the point where balance is good (minimum flicker).



3-2. RADIO SECTION


AM RF signal generator
put the lead-wire antenna close to the set.
30 % amplitude modulation by 400Hz signal
Output level : as low as possible





- Repeat the procedures in each adjustment several timers, and the tracking adjustments should be finally the trimmer capacitors.

AM IF ADJUSTMENT		
Adjust for a maximum reading on VTVM.		
T10	I	**455** kHz

- Start the FREQUENCY COVERAGE ADJUSTMENT from the FREQUENCY MAX.

AM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
CT1	L13
1750 ± 10kHz	**520** ± 2kHz

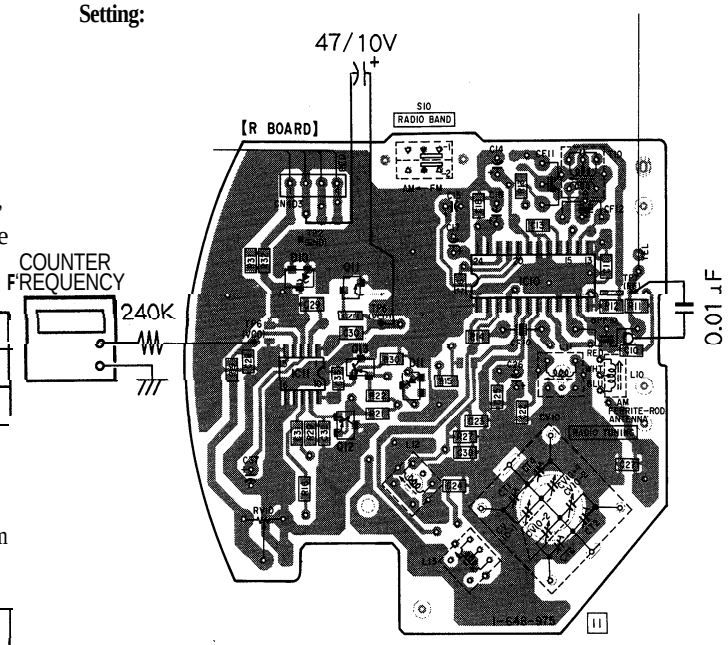
AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
CT2	L10
1,400kHz	600kHz

FM FREQUENCY COVERAGE ADJUSTMENT		
Adjust for a maximum reading on VTVM.		
CT3		L12
109.5MHz	I	86.5MHz

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
CT4	L11
109.5MHz	86.5MHz

FM MPX VCO ADJUSTMENT

Setting:

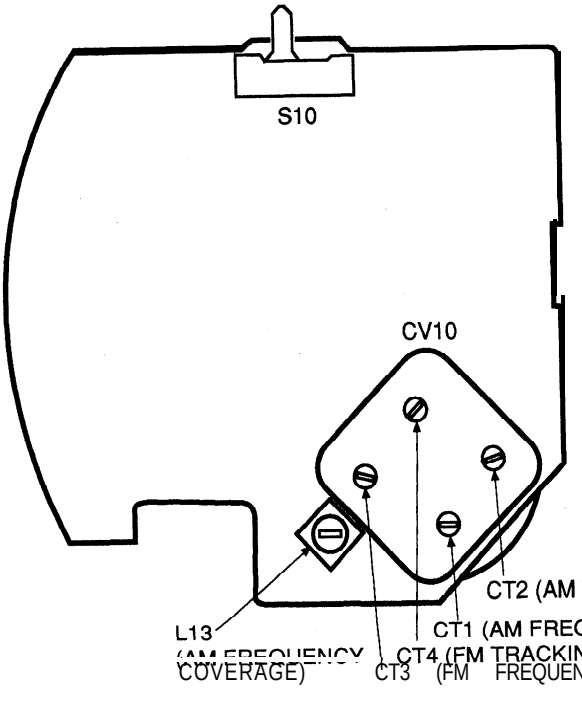


Procedure:

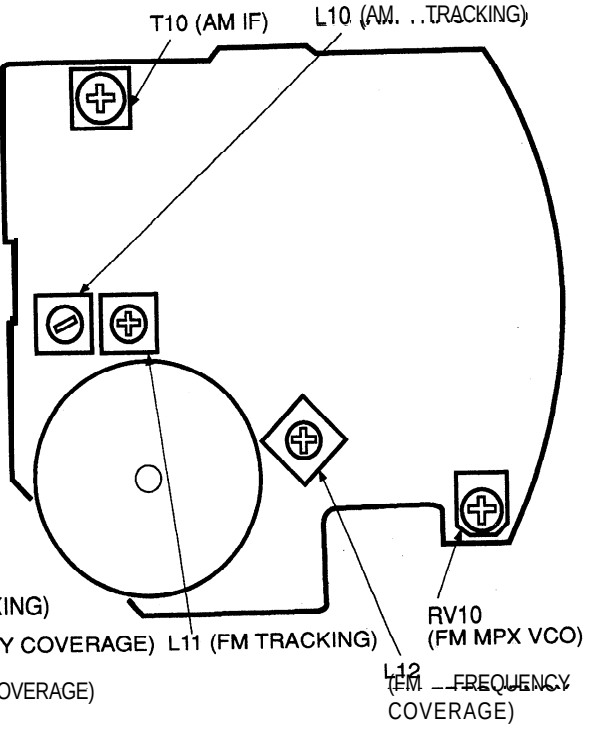
1. Connect to between TP7 (RF IN) and TP8 (GND) for 0.01 μF (1- 162-306-00).
2. Connect to between TP5 (DET OUT) and TP2 (GND) for **47** μF/10V (1- 124-236-00).
3. Tune the set to frequency min or max (detuned).
4. Adjust RV10 for 76kHz ± 200Hz reading on the frequency counter.

Adjustment Parts Location

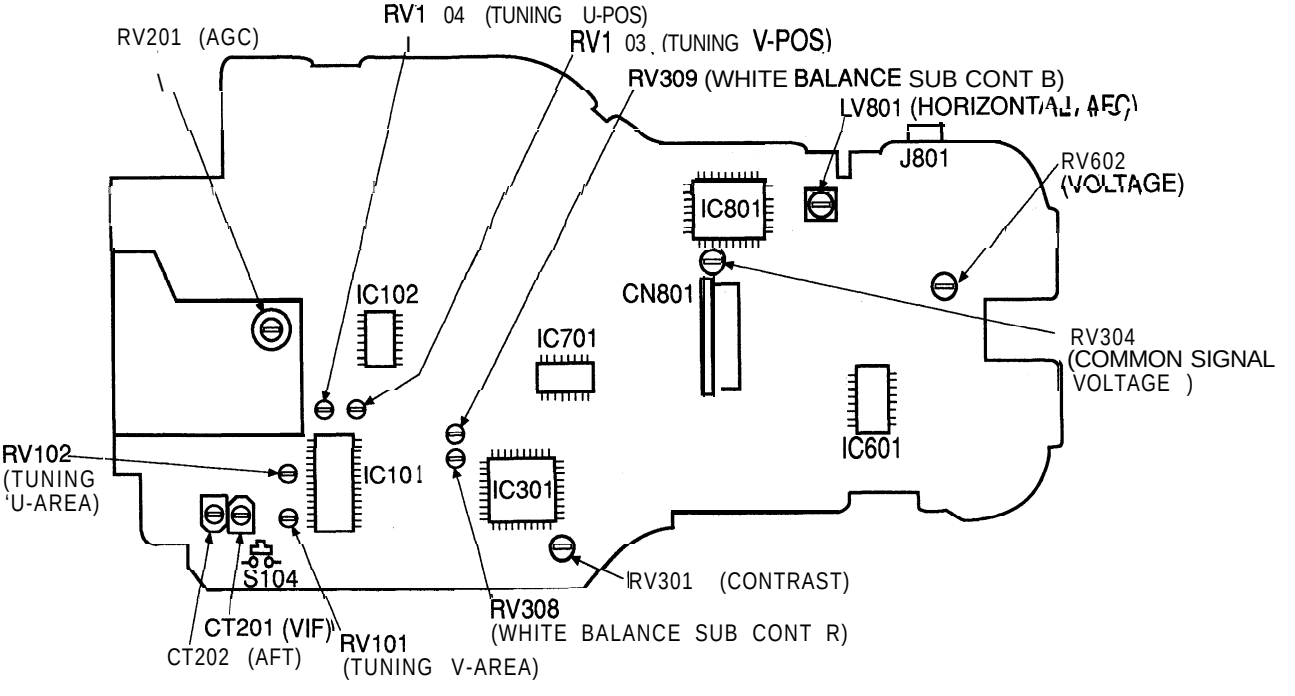
[R BOARD] — CONDUCTOR SIDE —



[R BOARD] — COMPONENT SIDE —

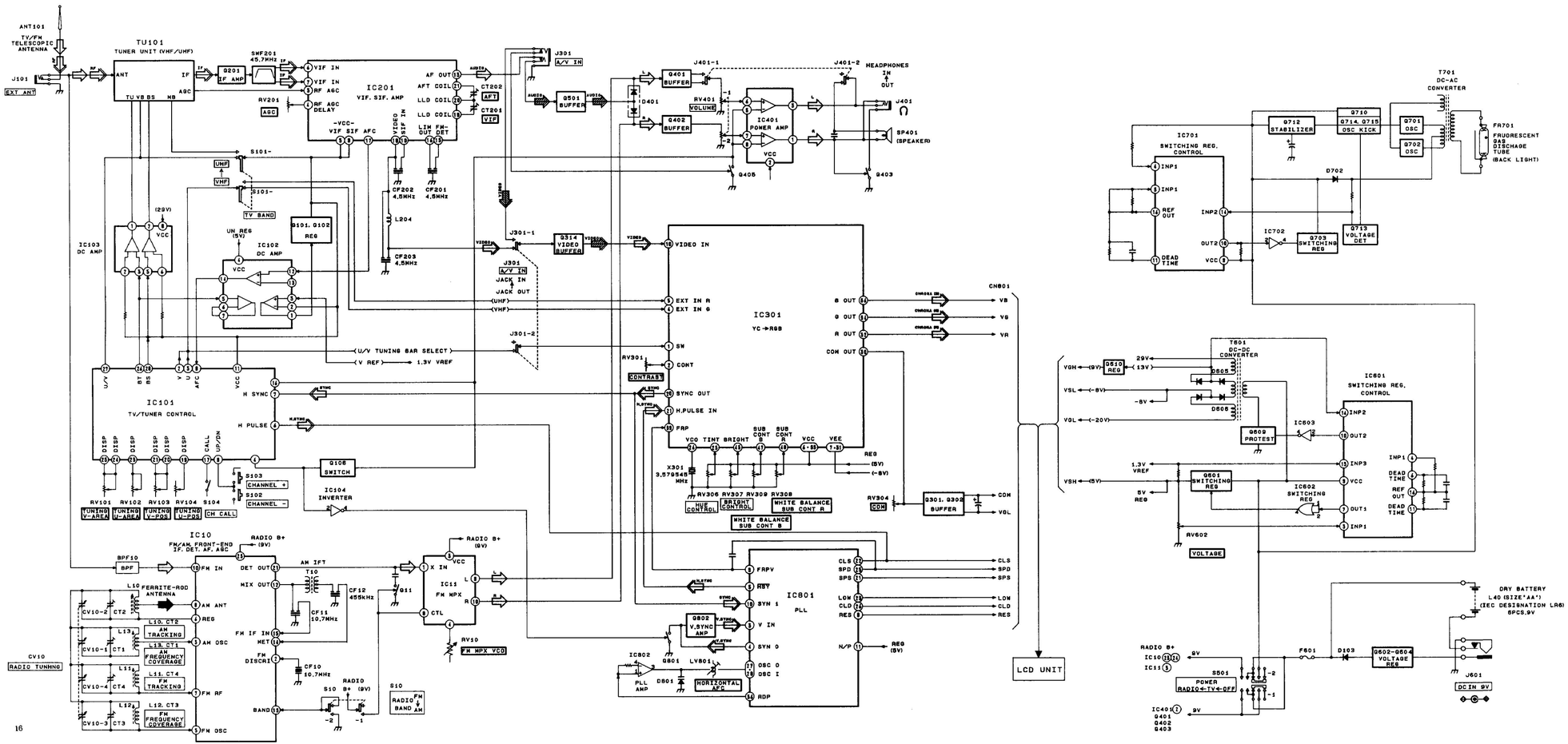


[A BOARD] — CONDUCTOR SIDE —



SECTION 4
DIAGRAMS

4-1. BLOCK DIAGRAM

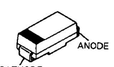


4-2. SEMICONDUCTOR LEAD LAYOUTS

IMD6
IMZ1

IMX1

EC10QS-04



1T33

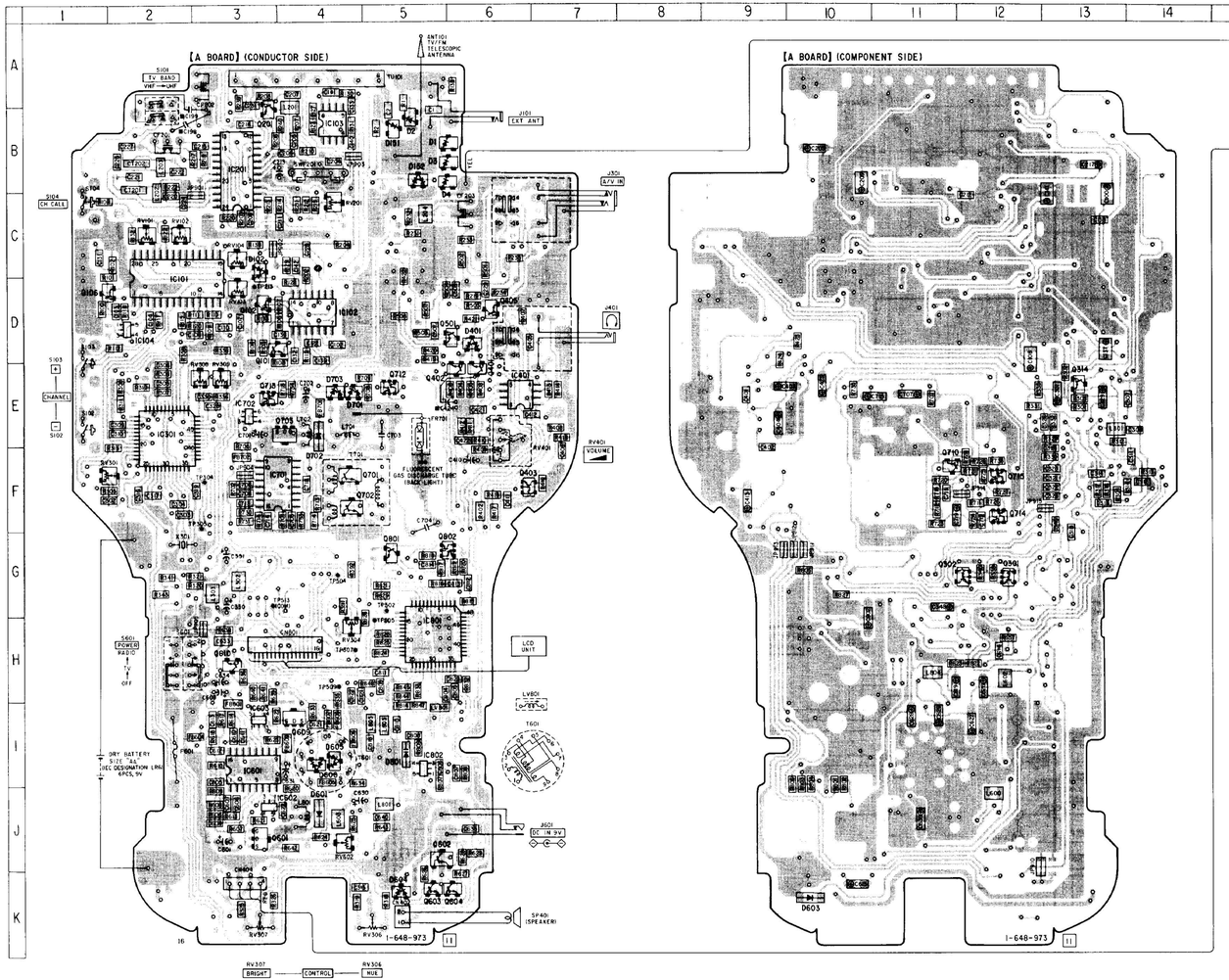
4-3. PRINTED WIRING BOARD

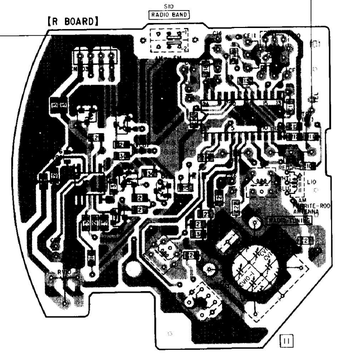
• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D1	B-5	IC801	H-5
D2	B-5	IC802	I-5
D3	B-5		
D4	B-5	Q11	C-16
D10	C-16	Q12	D-16
D11	D-17	Q13	D-16
D102	C-3	Q101	D-3
D151	B-5	Q102	D-3
D152	B-5	Q106	D-1
D401	D-6	Q201	B-3
D601	J-4	Q301	G-12
D603	K-10	Q302	G-12
D604	K-5	Q314	E-13
D605	I-4	Q401	E-6
D606	I-4	Q402	E-6
D701	E-4	Q403	F-6
D702	E-4	Q405	D-6
D703	E-4	Q501	D-6
D801	I-5	Q601	J-3
		Q602	J-5
IC10	C-18	Q603	K-5
IC11	D-16	Q604	K-6
IC101	C-2	Q609	I-4
IC102	D-4	Q610	H-3
IC103	B-4	Q701	F-4
IC104	D-2	Q702	F-4
IC201	B-3	Q703	E-4
IC301	E-2	Q710	F-11
IC401	E-6	Q712	E-5
IC601	I-3	Q713	E-3
IC602	J-3	Q714	F-12
IC603	I-3	Q715	F-12
IC701	F-3	Q801	G-5
IC702	E-3	Q802	G-5

Note on Mounting Diagram :

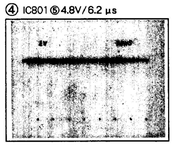
- o—— : Parts extracted from the component side.
- O : Through hole.
- ▒▒ : Pattern on the side which is seen.



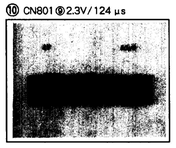


4-4. SCHEMATIC DIAGRAM

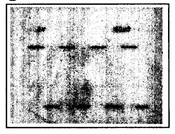
④ IC801 ⑤ 4.8V/6.2 µs



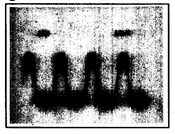
⑩ CN801 ⑨ 2.3V/124 µs



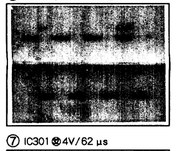
⑤ IC801 ⑧ 4.8V/124 µs



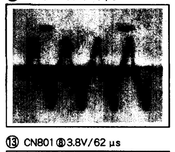
⑪ Q701 ⓒ 37V/26 µs



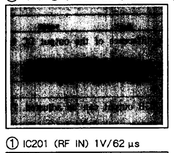
⑥ IC801 ⑧ 4.8V/124 µs



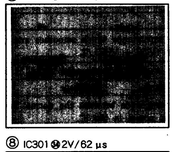
⑫ FR701 290V/26 µs



① IC201 ⑥ (VIDEO OUT) 0.9V/62 µs

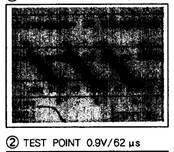


⑦ IC301 ㉒ 4V/62 µs

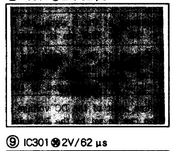


⑬ CN801 ⑧ 3.8V/62 µs

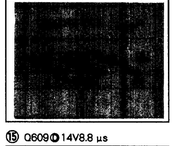
① IC201 (RF IN) 1V/62 µs



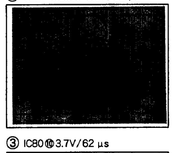
⑧ IC301 ㉔ 2V/62 µs



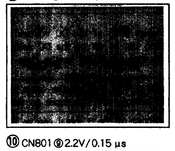
⑭ IC301 ㉕ 1V/62 µs



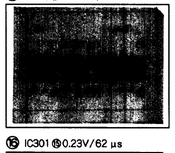
② TEST POINT 0.9V/62 µs



⑨ IC301 ㉓ 2V/62 µs

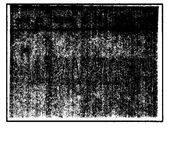


⑮ Q609 Ⓓ 14V8.8 µs

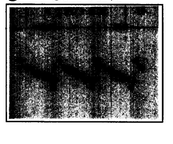


③ IC80 ⑯ 3.7V/62 µs

⑩ CN801 ⑨ 2.2V/0.15 µs

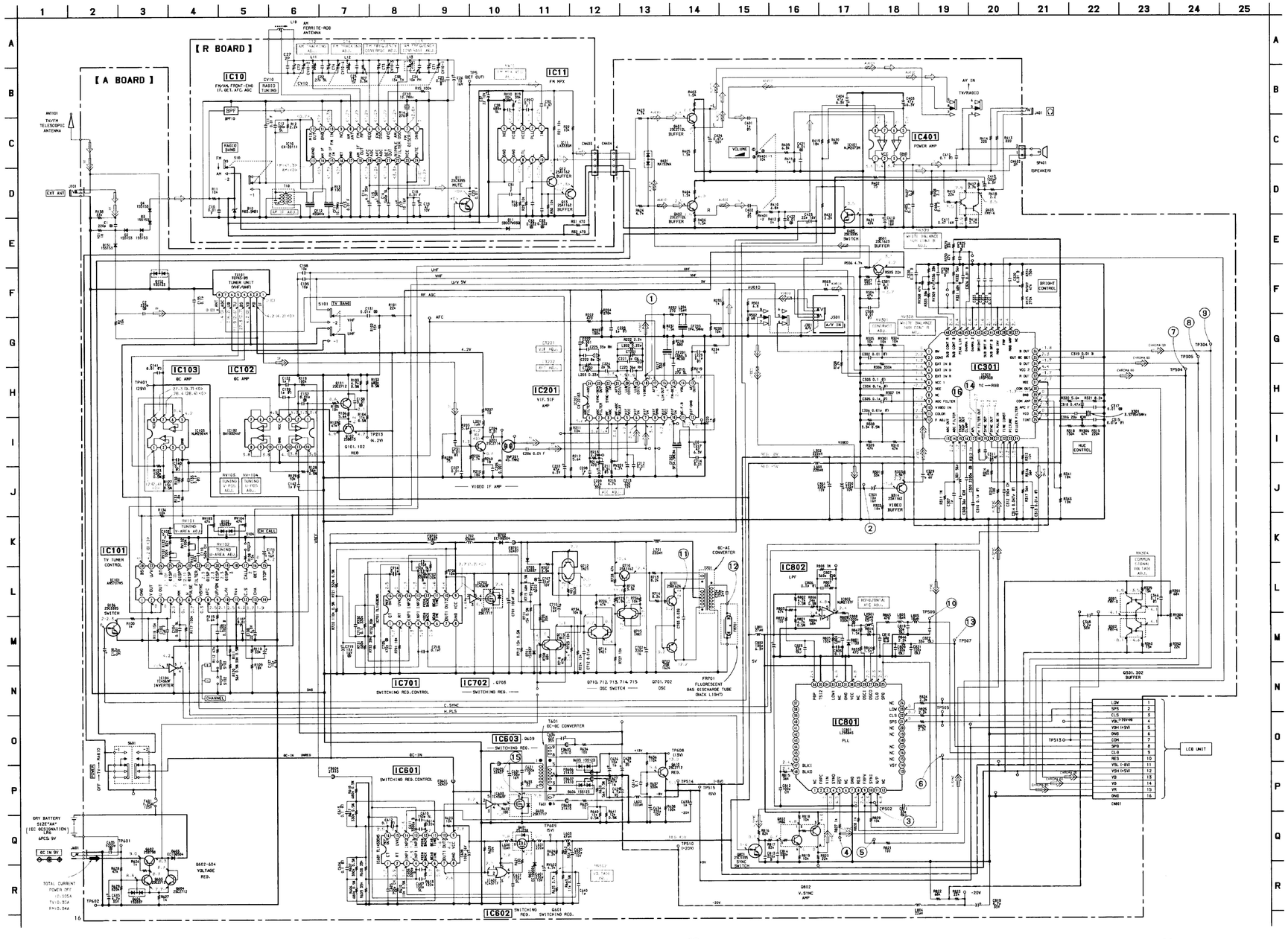


⑯ IC301 ⑤ 0.23V/62 µs



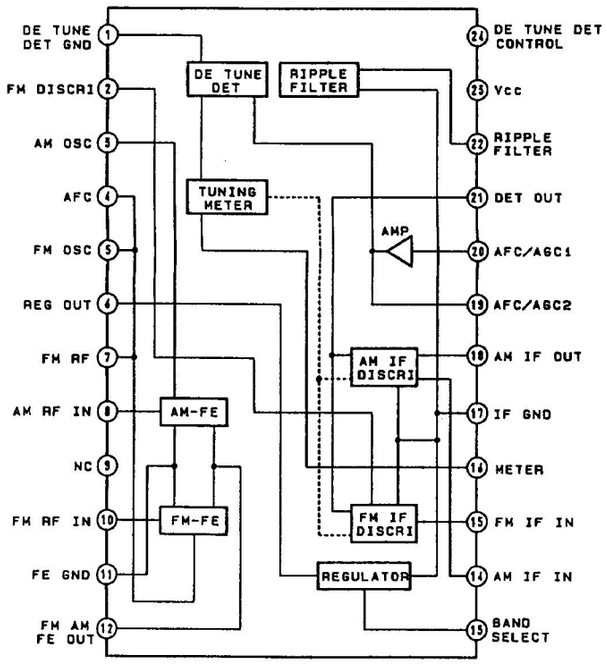
Note on Schematic Diagram :

- **All capacitors are in µF unless otherwise noted. pF: µµF**
- **50WV or less are not indicated except for electrolytics and tantaliums.**
- **All resistors are in Ω and ¼ W or less unless otherwise specified.**
- ● △ : **internal component.**
- ● ——— : B + Line.
- ● - - - - : B - Line.
- ● ▭ : adjustment for repair.
- Power voltage is dc 9V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground reading are taken with a color - bar signal input.
  - no mark : TV VHF
  - ( ) : TV UHF
  - ( ) : **RADIO FM**
- Voltages are taken with a VOM (input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  - ⇛ : A/V IN : AUDIO
  - ⇚ : A/V IN : VIDEO
  - ⇨ : TV (PICTURE)
  - ⇨ : TV (SOUND)
  - ⇨ : **FM (SOUND)**

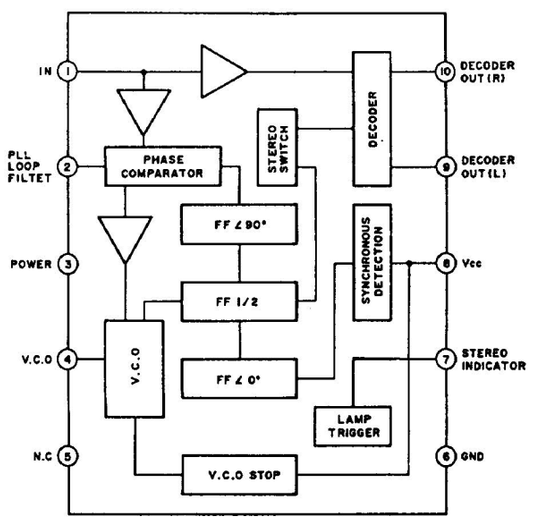


4-5. IC BLOCK DIAGRAMS

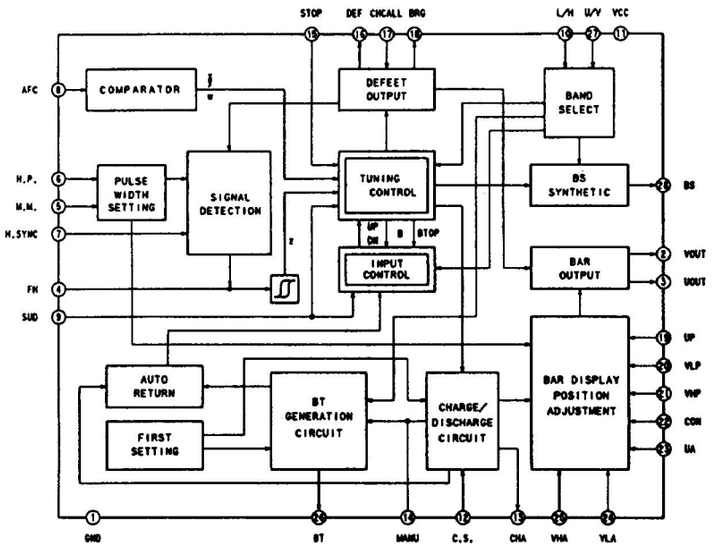
• IC10 CX20111



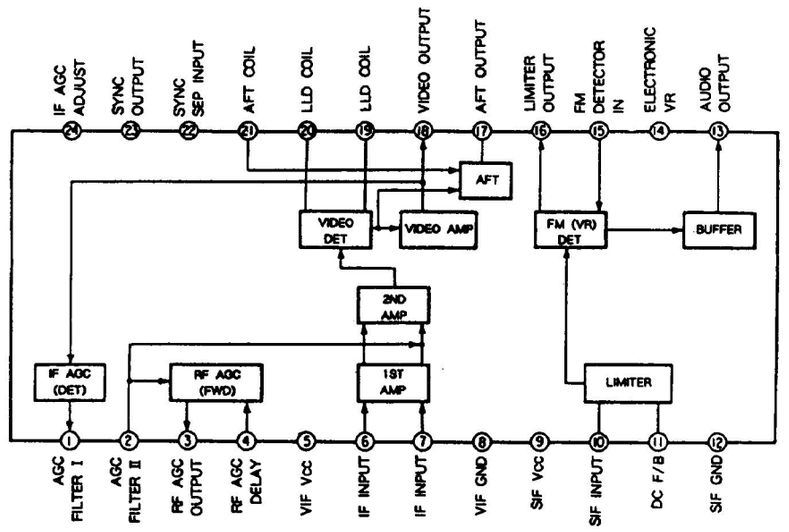
• IC11 LA3335M



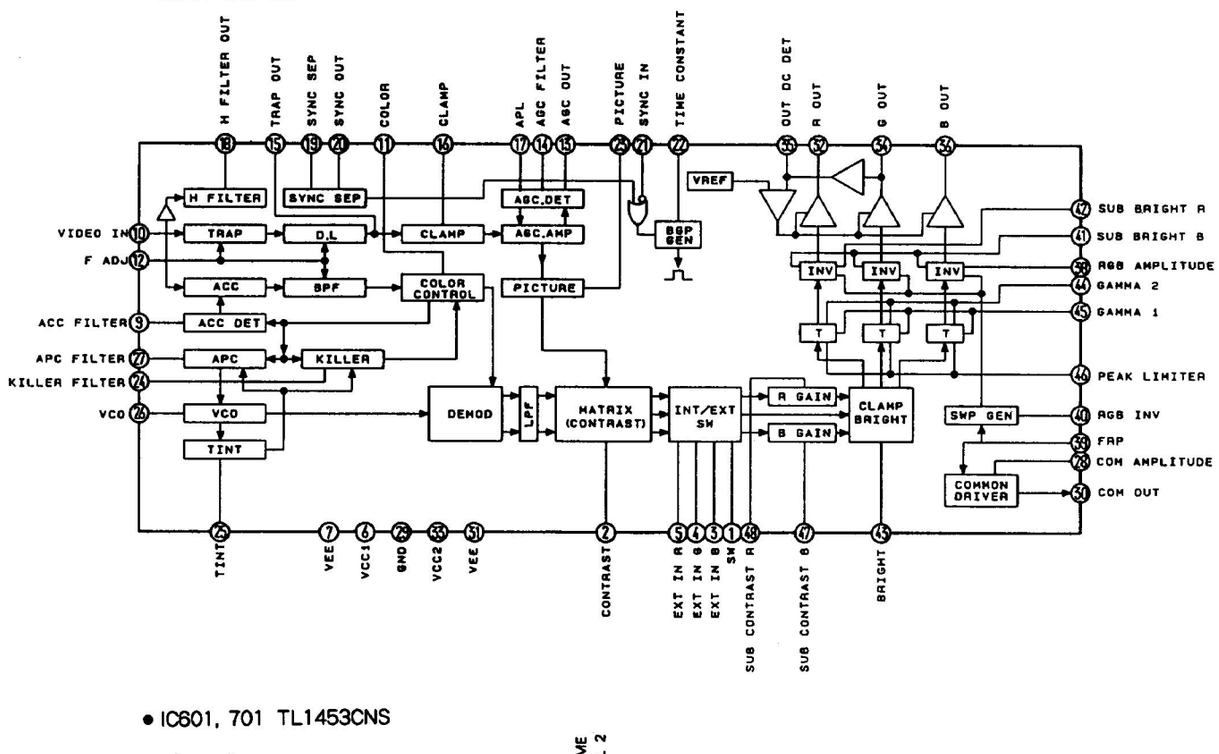
• IC101 AN5707NS



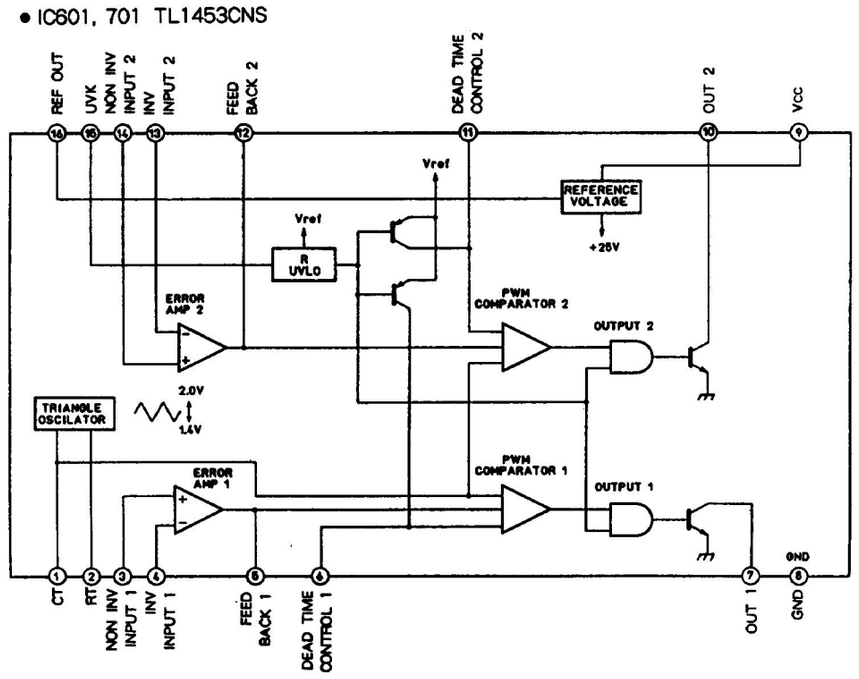
• IC201 M51348AFP



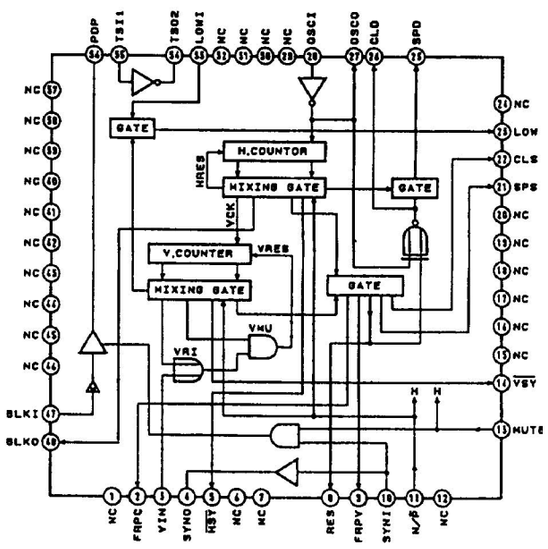
• IC301 IR3P90B



• IC601, 701 TL1453CNS



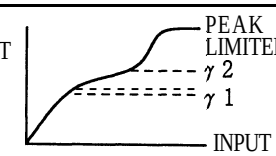
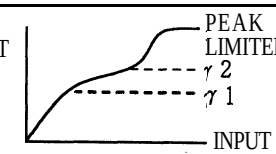
• IC801 LZ93BA5



4- 6. IC DESCRIPTION

• IC301 IR3P90B (A BOARD)

No.	Pin Name	I/O	Description
1	SW	I	This pin switches between the signal from the tuner block (INT), video, and signal from EXT R.G.B input pin (EXT). L : INT, H : open or EXT.
2	CONT	I	The contrast of the primary color output can be adjusted by the DC voltage input to this pin.
3	EXT IN B	I	No signal.
4	EXT IN G	I	VHF tuning display bay signal input.
5	EXT IN R	I	UHF tuning display bay signal input.
6	VCC1		Positive polarity power supply connection.
7	VEE		Negative polarity power supply connection.
8	N.C.		Not used.
9	ACC FILTER	I	The ACC detection filter is connected.
10	VIDEO IN	I	The video signal is input.
11	COLOR	I	Color is adjusted by the DC voltage input at this pin.
12	F ADJ	I	The frequency characteristics of the filter can be adjusted by the resistance value which is connected between this pin and GND.
13	AGC OUT	0	Not used.
14	AGC FILTER	I	The AGC detection filter of the video block is connected.
15	TRAP OUT	0	The 3.58 MHz trap is connected.
16	CLAMP	I	The capacitance which clamps the pedestal of the Y- signal is connected.
17	APL	I	The filter which detects the APL (Average Picture Level) of the Y-signal is connected.
18	H FILTER OUT	0	The video signal which separates the sync signal is output.
19	SYNC SEP	I	Sync signal separation circuit input. The video signal is input.
20	SYNC OUT	0	This pin outputs the sync signal which is separated at the sync circuit. The output type is the open collector type. Therefore, it is possible to connect this pin to the controller powered by another supply. The output signal is H when it is sync, and L when it is not sync.
21	H. PULSE IN	I	The L pulse (≒ 0V) is input when the sync signal is locked, and H pulse (≒ 3V) is input when. the sync signal is not locked. The sync signal which is input, and the sync signal which is separated at the sync separation circuit are OR and input to the pulse generator circuit.
22	TIME CONST	I	The gate pulse width is set with the CR time constant.
23	PICTURE	I	The frequency characteristics of the video block can be adjusted by the DC voltage which is input to this pin.
24	KILLER FILTER	I	The killer detection filter is connected.
25	TINT	I	The color phase can be adjusted by the DC voltage which is input at this pin.
26	vco		The crystal oscillator is connected.
27	APC F	I	The APC detection filter is connected.
28	COM AMP	I	The COMMON output amplitude can be adjusted by the DC voltage which is input at this pin.
29	GND		GND
30	COM OUT	0	This pin outputs the pulse which drives the common electrode of the LCD.
31	VEE		Negative polarity power supply pin.
32	R OUT	0	The inverted primary color signal is output according to the inversion signal.
33	vcc2		Positive polarity power supply connection
34	G OUT	0	The inverted primary color signal is output according to the inversion signal.

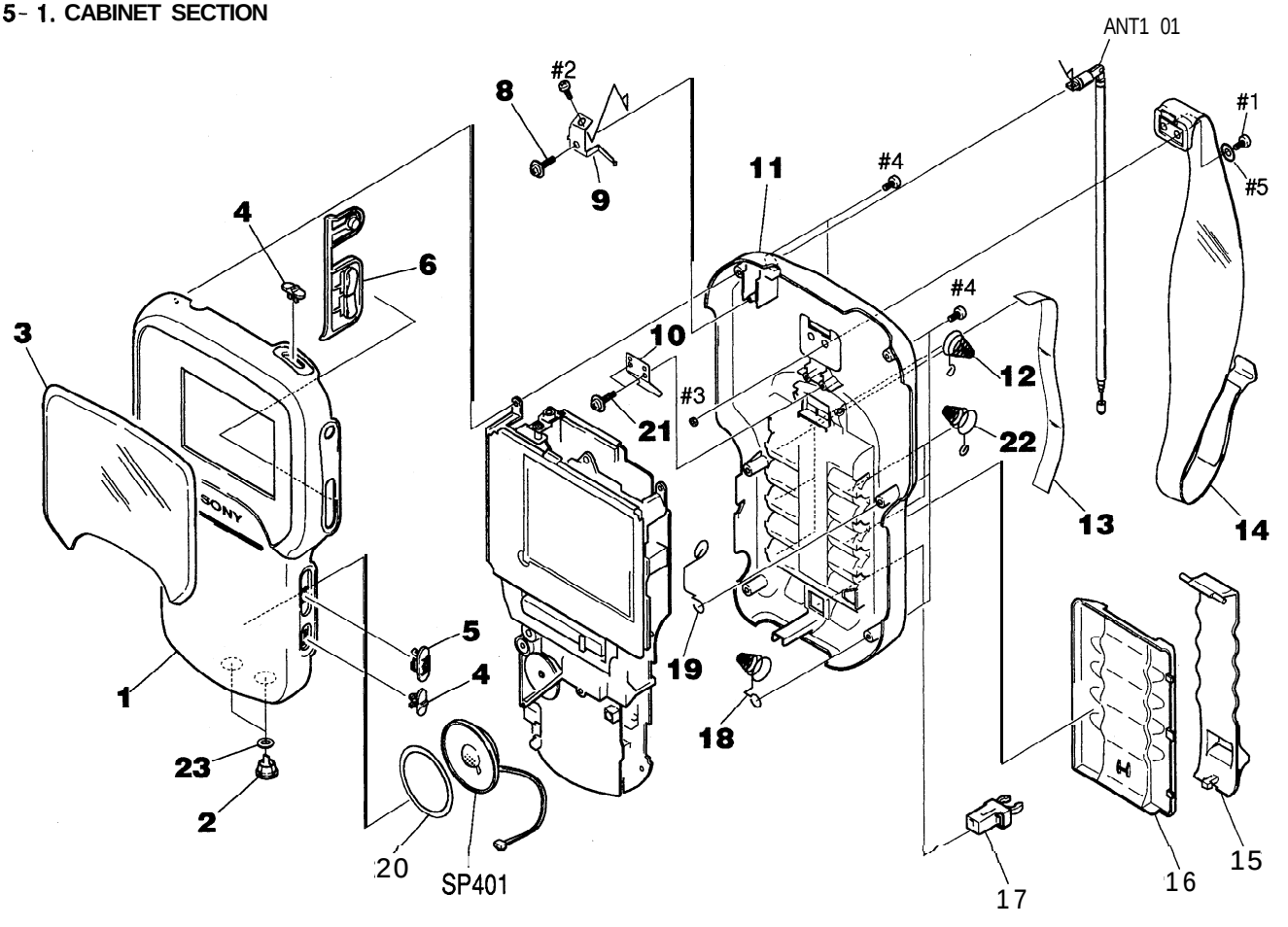
No.	Pin Name	I/O	Description
35	OUT DC DET	I	The capacitance which smoothes and protects the difference of the output DC bias from (VCC + VEE) /2.
36	B OUT	0	The inverted primary color signal is output according to the inversion signal.
37	N . C .		Not used.
38	RGB AMP	I	The amplitude between the normal and inverted RGB output can be adjusted. This pin is preset in the IC.
39	FRP	I	The inversion signal is input.
40	RGB INV	I	GND
41	SUB BRT B	I	The brightness of the B signal can be finely adjusted by the DC voltage which is input to this pin. This pin is preset in the IC.
42	SUB BRT R	I	The brightness of the R signal can be finely adjusted by the DC voltage which is input to this pin. This pin is preset in the IC.
43	BRIGHT	I	The Y-signal can be adjusted by the DC voltage which is input to this pin.
44	GAMMA 2	I	The change point of the DC voltage gain of γ correction can be set by the DC voltage which is input to this pin.(Refer to the' right figure.) The γ -correction pin is preset in the IC. 
45	GAMMA 1	I	The change point of the DC voltage gain of γ correction can be set by the DC voltage which is input to this pin.(Refer to the right figure.) 
46	PEAK LIM	I	The peak limiter level on the white peak of the primary color output can be set by the DC voltage which is input to this pin.
47	SUB CONT B	I	The contrast of the B signal can be finely adjusted by the DC voltage which is input to this pin. This pin is preset in the IC.
48	SUB CONT R	I	The contrast of the R signal can be finely adjusted by the DC voltage which is input to this pin. This pin is preset in the IC.

SECTION 5
EXPLODED VIEWS

NOTE:

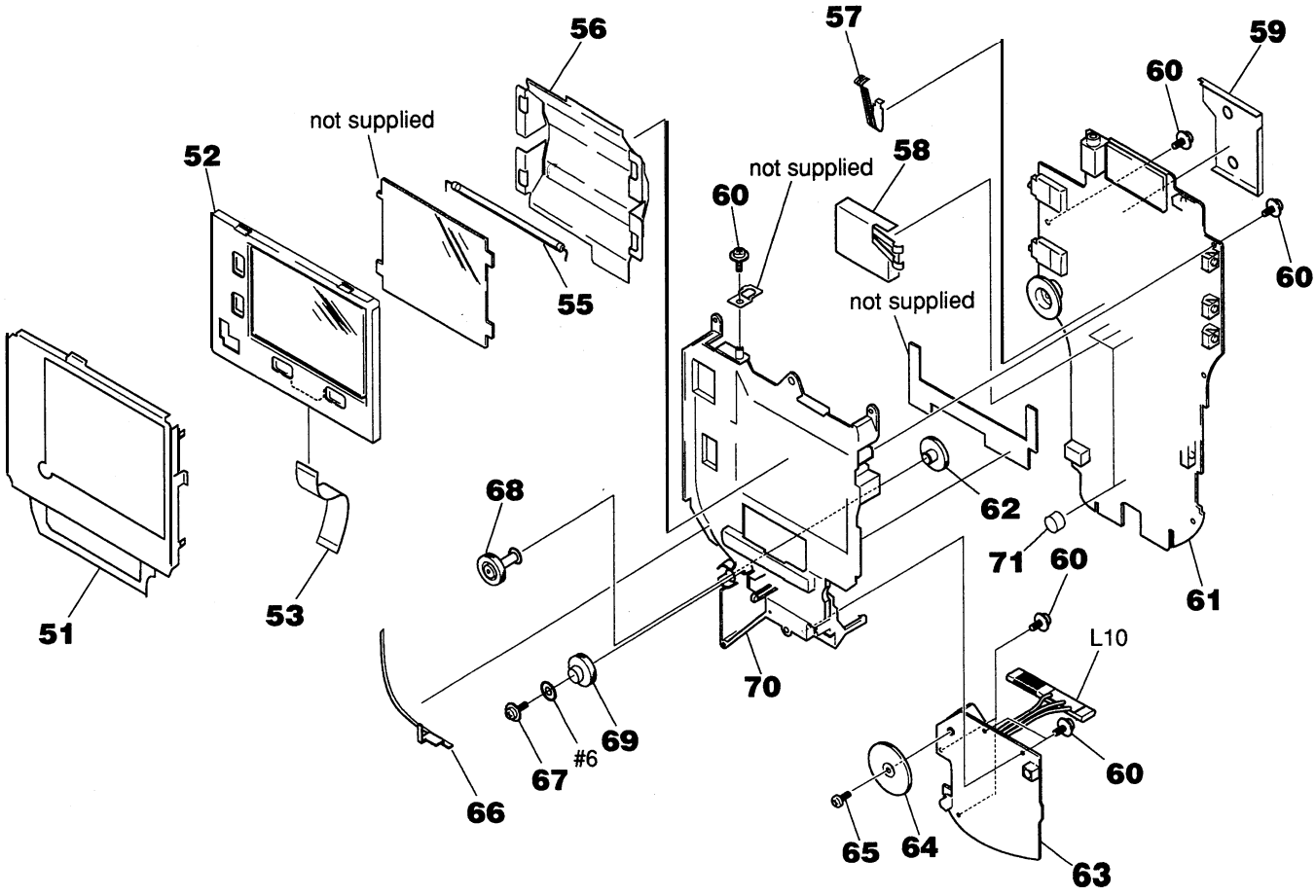
- - xx, - X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)... (RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

5-1. CABINET SECTION



Ref. No.	Part No.	Description	Remarks
1	X-4031-296-1	CABINET (FRONT) SUB ASSY	
2	3-338-877-01	KNOB (ADJUSTMENT)	
3	4-040-454-01	FILTER (A)	
4	4-035-173-01	KNOB, BAND SELECTION	
5	4-035-172-01	KNOB, POWER SW	
6	4-040-464-01	BUTTON, CH	
8	3-669-480-41	+ PTPWH 2	
9	X-4031-149-1	TERMINAL BOARD (ANT) ASSY	
10	4-040-468-01	SPRING, CLICK	
11	4-040-466-01	CABINET (REAR)	
12	4-040-470-01	TERMINAL, BATTERY	
13	4-040-478-01	RIBBON, BATTERY	
14	4-040-473-01	STRAP	
* 15	4-040-471-01	STAND	
16	4-040-455-01	LID, BATTERY CASE	
17	4-040-472-01	LATCH, D.C.	
18	4-040-469-01	TERMINAL (-), BATTERY	
19	4-040-465-01	TERMINAL (+), BATTERY	
20	4-040-467-01	SHEET, ADHESIVE	
21	3-669-480-21	SCREW (+PTPWH)(2)	
22	4-041-411-01	TERMINAL(A), BATTERY	
* 23	4-041-367-01	SHEET, LUMILER	
ANT101	1-501-608-11	ANTENNA, TELESCOPIC	
SP401	1-504-154-11	SPEAKER (3.6CM)	

5- 2. DISPLAY SECTION



Ref. No.	Part No.	Description	Remarks
* 51	4-040-458-01	PLATE (LCD), SHIELD	
52	l-809-878-11	INDICATOR MODULE	
53	l-751-406-11	CABLE, FLAT (16 CORE)	
55	1-517-125-21	GAS DISCHARGE TUBE,FLUORESCENT	
56	4-040-532-01	REFLECTOR	
57	4-040-483-01	TERMINAL BOARD	
* 58	4-040-479-01	PLATE (C), SHIELD	
* 59	4-040-482-01	CASE (F), SHIELD	
60	3-669-480-21	+ PTPWH 2	
* 61	A-3016-404-A	A BOARD, COMPLETE	
62	4-040-452-01	KNOB, TU	
* 63	A-3016-405-A	R BOARD, COMPLETE	
64	4-040-534-01	DRUM, TUNING CAPACITOR	
65	3-714-118-01	SCREW (1.7X4)	
* 66	4-040-457-01	POINTER	
67	3-318-201-51	SCREW (B) (1.4X4), TAPPING	
68	4-040-453-01	GEAR (A)	
69	4-035-124-01	GEAR, TU	
* 70	4-040-451-01	CHASSIS	
71	4-040-878-01	CASE, ALUMINUM	
L10	l-402-594-21	ANTENNA, FERRITE-ROD (AM)	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

. CAPACITORS :
uF : μF

. RESISTORS
All resistors are in ohms.
METAL : metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F : nonflammable

- COILS
uH : μH
- SEMICONDUCTORS
In each case, u : μ, for example :
uA... : μA... , uPA... , μPA... ,
uPB... , μPB... , uPC... , μPC... ,
uPD.... μPD...

Ref. No.	Part No.	Description			Remarks
*	A-3016-404-A	A BOARD, COMPLETE			
		**********			
	3-708-377-01	SLIDER, SURF LOCK (16P)			
*	4-040-479-01	PLATE (C), SHIELD			
*	4-040-482-01	CASE (F), SHIELD			
	4-040-483-01	TERMINAL BOARD			
	4-040-878-01	CASE, ALUMINUM			
		< CAPACITOR >			
C1	1-163-001-11	CERAMIC CHIP	220PF	10%	50v
C2	1-163-001-11	CERAMIC CHIP	220PF	10%	50v
C100	1-126-610-11	ELECT CHIP	2.2uF	0	35v
C102	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C103	1-164-346-11	CERAMIC CHIP	1uF		16V
C104	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50v
C106	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C107	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C108	1-128-022-11	ELECT CHIP	22uF	0	6.3V
C110	1-163-135-00	CERAMIC CHIP	560PF	5%	50v
C111	1-128-029-11	ELECT CHIP	4.7uF	0	16V
C122	1-164-346-11	CERAMIC CHIP	1uF		16V
C131	1-164-232-11	CERAMIC CHIP	0.01uF		50v
C132	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C133	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C135	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C137	1-128-020-11	ELECT CHIP	10uF	0	6.3V
C138	1-164-232-11	CERAMIC CHIP	0.01uF		50v
C139	1-164-346-11	CERAMIC CHIP	1uF		16V
C140	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C141	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C142	1-164-346-11	CERAMIC CHIP	1uF		16V
C198	1-102-947-00	CERAMIC	10PF	0.5PF	50V
C199	1-102-947-00	CERAMIC	10PF	0.5PF	50V
C203	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C204	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C205	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50v
C206	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C207	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C208	1-164-346-11	CERAMIC CHIP	1uF		16V
C209	1-126-610-11	ELECT CHIP	2.2uF	0	35v
C211	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C212	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C213	1-126-923-11	ELECT	220uF	20%	10V
C214	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C215	1-163-103-00	CERAMIC CHIP	27PF	5%	50v
C217	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C220	1-163-106-00	CERAMIC CHIP	36PF	5%	50v
C221	1-163-091-00	CERAMIC CHIP	8PF		50v
C222	1-163-091-00	CERAMIC CHIP	8PF		50v
C224	1-163-085-00	CERAMIC CHIP	2PF		50v
C225	1-163-367-11	CERAMIC CHIP	39PF	5%	50v
C227	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50v
C228	1-164-346-11	CERAMIC CHIP	1uF		16V
C229	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C231	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C301	1-124-779-00	ELECT CHIP	10uF	20%	16V
C302	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C303-305	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C306	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C307	1-164-346-11	CERAMIC CHIP	1uF		16V
C308	1-163-106-00	CERAMIC CHIP	36PF	5%	50v
C309	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C310	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C311	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C312	1-163-121-00	CERAMIC CHIP	150PF	5%	50v
C313	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C314	1-163-035-00	CERAMIC CHIP	0.047uF		50v
C315	1-163-031-11	CERAMIC CHIP	0.01uF		50v
C316	1-163-234-11	CERAMIC CHIP	20PF	5%	50v
C317	1-164-232-11	CERAMIC CHIP	0.01uF		50v
C318	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C319-323	1-164-232-11	CERAMIC CHIP	0.01uF		50v
C325	1-164-232-11	CERAMIC CHIP	0.01uF		50v
C326	1-164-232-11	CERAMIC CHIP	0.01uF		50v
C328	1-164-232-11	CERAMIC CHIP	0.01uF		50v
C329	1-126-607-11	ELECT CHIP	47uF	20%	4v

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Refa No.	Part No.	Description			Remarks
C330	1-164-232-11	CERAMIC CHIP	0.01uF		5ov
C346	l-163-038-00	CERAMIC CHIP	0.1uF		25V
C348	l-126-601-11	ELECT CHIP	2.2uF	20%	5ov
C350	1-126-923-11	ELECT	220uF	20%	10V
C351	1-126-923-11	ELECT	220uF	20%	10V
C401	1-164-346-11	CERAMIC CHIP	1uF		16V
C402	1-164-346-11	CERAMIC CHIP	1uF		16V
C403	l-126-205-11	ELECT CHIP	47uF	20%	6.3V
C404	l-126-205-11	ELECT CHIP	47uF	20%	6.3V
C405	l-163-038-00	CERAMIC CHIP	0.1uF		25V
C406	l-163-038-00	CERAMIC CHIP	0.1uF		25V
C410	1-126-933-11	ELECT	100uF	20%	16V
c411	l-164-005-11	CERAMIC CHIP	0.47uF		25V
C412	l-163-038-00	CERAMIC CHIP	0.1uF		25V
C413	l-126-206-11	ELECT CHIP	100uF	20%	6.3V
c421	1-164-232-11	CERAMIC CHIP	0.01uF		5ov
C422	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C423	1-126-395-11	ELECT	22uF	20%	16V
C424	l-124-465-00	ELECT	0.47uF	20%	5ov
C501	l-163-038-00	CERAMIC CHIP	0.1uF		25V
C503	l-163-031-11	CERAMIC CHIP	0.01uF		5ov
C601	1-126-923-11	ELECT	220uF	20%	10V
C604	l-163-038-00	CERAMIC CHIP	0.1uF		25V
C605	l-163-138-00	CERAMIC CHIP	750PF	5%	5ov
C606	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	5ov
C607	l-163-121-00	CERAMIC CHIP	150PF	5%	5ov
C608	1-126-933-11	ELECT	100uF	20%	16V
C610	l-163-121-00	CERAMIC CHIP	150PF	5%	5ov
C611	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	5ov
C612-614	l-163-038-00	CERAMIC CHIP	0.1uF		25V
C615	l-126-603-11	ELECT CHIP	4.7uF	20%	35v
C621	l-163-011-11	CERAMIC CHIP	0.0015uF	10%	5ov
C622	l-163-117-00	CERAMIC CHIP	100PF	5%	5ov
C626	l-124-779-00	ELECT CHIP	10uF	20%	16V
C627	l-126-204-11	ELECT CHIP	47uF	20%	16V
C628	l-126-603-11	ELECT CHIP	4.7uF	20%	35v
C629	l-126-603-11	ELECT CHIP	4.7uF	20%	35v
C630	1-126-923-11	ELECT	220uF	20%	10V
C631	1-126-933-11	ELECT	100uF	20%	16V
C633	1-162-638-11	CERAMIC CHIP	1uF		16V
C634	1-126-923-11	ELECT	220uF	20%	10V
C635	l-163-009-11	CERAMIC CHIP	0.001uF	10%	5ov
C636	l-126-400-11	ELECT	22uF	20%	35v
C640	1-164-346-11	CERAMIC CHIP	1uF		16V
C701	1-128-134-61	ELECT	100uF	20%	16V
C702	1-126-934-11	ELECT	220uF	20%	16V
C703	l-130-490-11	MYLAR	0.039uF	5%	5ov
C704	l-104-519-11	CERAMIC	150PF	10%	2KV
C705	l-163-005-11	CERAMIC CHIP	470PF	10%	5ov
C706	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	5ov
C707	1-126-395-11	ELECT	22uF	20%	16V
C708	l-163-121-00	CERAMIC CHIP	150PF	5%	5ov
C712	l-163-031-11	CERAMIC CHIP	0.01uF		5ov
C713	l-163-038-00	CERAMIC CHIP	0.1uF		25V
C714	l-163-038-00	CERAMIC CHIP	0.1uF		25V
C715	l-124-779-00	ELECT CHIP	10uF	20%	16V
C716	l-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C718	l-163-038-00	CERAMIC CHIP	0.1uF		25V
C719	l-124-779-00	ELECT CHIP	10uF	20%	16V
C802	l-126-206-11	ELECT CHIP	100uF	20%	6.3V
C804-806	l-163-038-00	CERAMIC CHIP	0.1uF		25V
C807	l-163-135-00	CERAMIC CHIP	560PF	5%	5ov
C808	l-163-009-11	CERAMIC CHIP	0.001uF	10%	5ov
C809	l-163-117-00	CERAMIC CHIP	100PF	5%	5ov
C810	l-163-113-00	CERAMIC CHIP	68PF	5%	5ov
C811	l-163-105-00	CERAMIC CHIP	33PF	5%	5ov
C812	1-163-251-11	CERAMIC CHIP	100PF	5%	5ov
C813	l-163-001-11	CERAMIC CHIP	220PF	10%	5ov
C814	l-163-003-11	CERAMIC CHIP	330PF	10%	5ov
C818	l-163-105-00	CERAMIC CHIP	33PF	5%	5ov
C819	l-126-603-11	ELECT CHIP	4.7uF	20%	35v
C821	l-163-117-00	CERAMIC CHIP	100PF	5%	5ov
C822	l-163-105-00	CERAMIC CHIP	33PF	5%	5ov
C823	l-163-105-00	CERAMIC CHIP	33PF	5%	5ov

〈 FILTER 〉

CF201	1-567-513-11	FILTER, CERAMIC
CF202	1-579-954-11	FILTER, CERAMIC
CF203	l-409-332-00	CERAMIC TRAP (4.5MHZ)

〈 CONNECTOR 〉

*	CN402	l-564-336-00	PIN, CONNECTOR 2P
*	CN404	l-564-338-00	PIN, CONNECTOR 4P
	CN801	l-569-530-11	HOUSING, CONNECTOR 16P

〈 TRIMMER 〉

CT201	1-141-327-11	CAP, VAR, TRIMMER	(CHIP TYPE)
CT202	1-141-327-11	CAP, VAR, TRIMMER	(CHIP TYPE)

〈 DIODE 〉

Dl-4	8-719-108-01	DIODE 1SS153
D102	8-719-400-18	DIODE MA152WK
D151	8-719-108-01	DIODE 1SS153
D152	8-719-800-76	DIODE 1SS226
D401	8-719-400-20	DIODE MA152WA
D601	8-719-210-39	DIODE EC10QS-04
D603	8-719-210-39	DIODE EC10QS-04

Ref. No.	Part No.	Description	Remarks
D604	8-719-400-18	DIODE MA152WK	
D605	8-719-800-76	DIODE 1SS226	
D606	8-719-800-76	DIODE 1SS226	
D701	8-719-400-18	DIODE MA152WK	
D702	8-719-210-39	DIODE EC10QS-04	
D703	8-719-400-18	DIODE MA152WK	
D801	8-713-300-57	DIODE 1T33	
		‹ FUSE ›	
F601	1-532-777-41	FUSE, MICRO (SECONDARY) 1.25A 125V	
		‹ FERRITE BEAD ›	
FB601	1-543-813-21	FILTER, EM1	
FB604-608	1-414-135-11	INDUCTOR CHIP OUH	
FB609	1-543-813-21	FILTER, EM1	
FB701	1-543-813-21	FILTER, EM1	
FB702	1-543-813-21	FILTER, EM1	
		‹ IC ›	
IC101	8-759-420-88	IC AN5707NS	
IC102	8-759-075-55	IC BA10324AF	
IC103	8-759-981-69	IC LM2904M	
IC104	8-759-209-57	I C TC4S69F	
IC201	8-759-176-91	IC M51348AFP	
IC301	8-759-513-08	IC IR3P90B	
IC401	8-759-701-02	I C NJM2073M	
IC601	8-759-972-76	IC TL1453CNS	
IC602	8-759-209-90	IC TC4S71F	
IC603	8-759-209-57	IC TC4S69F	
IC701	8-759-972-76	IC TL1453CNS	
IC702	8-759-209-57	I C TC4S69F	
IC801	8-759-084-78	I C LZ93BA5	
IC802	8-759-710-79	I C NJM2107F	
		‹ JACK ›	
J101	1-565-457-11	JACK (EXT ANT)	
5301	1-568-593-11	JACK 1P (A/V IN)	
5401	1-568-593-61	JACK 1P (HEADPHONES)	
J601	1-569-966-11	JACKE, DC (DC IN 9V)	
		‹ JUMPER RESISTOR ›	
JP901-905	1-216-295-00	METAL CHIP 0 5%	1/10W
JP910	1-216-296-00	METAL CHIP 0 5%	1/8W
JP911-915	1-216-295-00	METAL CHIP 0 5%	1/10W
		‹ COIL ›	
L201	1-410-369-11	INDUCTOR CHIP 1uH	
L202	1-410-733-11	INDUCTOR CHIP 0.22uH	
L203	1-410-733-11	INDUCTOR CHIP 0.22uH	
L204	1-410-383-31	INDUCTOR CHIP 15uH	
L301	1-410-390-11	INDUCTOR CHIP 56uH	
L302	1-410-658-31	INDUCTOR CHIP 220uH	
L303	1-410-658-31	INDUCTOR CHIP 220uH	
L600	1-412-029-11	INDUCTOR CHIP 10uH	
L601	1-406-829-11	COIL, CHOKE 220uH	
L602	1-412-032-11	INDUCTOR CHIP 100uH	
L603	1-412-031-11	INDUCTOR CHIP 47uH	
L701	1-406-829-11	COIL, CHOKE 220uH	
L702	1-402-674-11	COIL, CHOKE 330uH	
L801	1-410-386-11	INDUCTOR CHIP 27uH	
L803	1-410-945-31	INDUCTOR CHIP 18uH	
L804	1-410-385-11	INDUCTOR CHIP 22uH	
L805	1-410-945-31	INDUCTOR CHIP 18uH	
		‹ VARIABLE COIL ›	
LV801	1-402-783-11	COIL (OSC)	
		‹ TRANSISTOR ›	
Q101	8-729-230-49	TRANSISTOR 2SC2712-G	
Q102	8-729-807-87	TRANSISTOR 2SB1295-UL6	
Q106	8-729-805-45	TRANSISTOR 2SC3395	
Q201	8-729-200-87	TRANSISTOR 2SC2714-Y	
9301	8-729-904-41	TRANSISTOR FMY3	
Q302	8-729-904-44	TRANSISTOR FMY4	
Q314	8-729-216-22	TRANSISTOR 2SA1162	
Q401	8-729-230-49	TRANSISTOR 2SC2712-G	
Q402	8-729-230-49	TRANSISTOR 2SC2712-G	
Q403	8-729-904-44	TRANSISTOR FMY4	
Q405	8-729-805-45	TRANSISTOR 2SC3395	
Q501	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
9601	8-729-019-91	TRANSISTOR 2SJ238-TE12L	
Q602	8-729-101-07	TRANSISTOR 2SB798-DL	
Q603	8-729-230-49	TRANSISTOR 2SC2712-G	
Q604	8-729-230-49	TRANSISTOR 2SC2712-G	
Q609	8-729-017-74	TRANSISTOR 2SK1717-TE12L	
Q610	8-729-230-49	TRANSISTOR 2SC2712-G	
Q701	8-729-808-42	TRANSISTOR 2SD1624-T	
Q702	8-729-808-42	TRANSISTOR 2SD1624-T	
Q703	8-729-017-74	TRANSISTOR 2SK1717-TE12L	
9710	8-729-216-22	TRANSISTOR 2SA1162	
Q712	8-729-907-46	TRANSISTOR IMZ1	
Q713	8-729-907-26	TRANSISTOR IMX1	
Q714	8-729-907-46	TRANSISTOR IMZ1	

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Refa No.t	N o .	Description	Remarks
Q715	8-729-907-26	TRANSISTOR IMX1	
Q801	8-729-805-45	TRANSISTOR 2SC3395	
Q802	8-729-925-52	TRANSISTOR IMD6	

〈 RESISTOR 〉

R1	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R2	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R100	l-216-049-00	METAL	CHIP	1K 5%	1/10W
R101	l-216-081-00	METAL	CHIP	22K 5%	1/10W
R102	l-216-077-00	METAL	CHIP	15K 5%	1/10W
R103	1-216-667-11	METAL	CHIP	4.7K 0.5%	1/10W
R104	1-216-676-11	METAL	CHIP	11K 0.5%	1/10W
R105	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R106	l-216-067-00	METAL	CHIP	5.6K 5%	1/10W
R107	l-216-089-00	METAL	CHIP	47K 5%	1/10W
R108	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R109	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R110	l-216-085-00	METAL	CHIP	33K 5%	1/10W
R111	1-216-689-11	METAL	CHIP	39K 0.5%	1/10W
R112	l-216-089-00	METAL	CHIP	47K 5%	1/10W
R115	l-216-067-00	METAL	CHIP	5.6K 5%	1/10W
R117	l-216-097-00	METAL	CHIP	100K 5%	1/10W
R118	l-216-077-00	METAL	CHIP	15K 5%	1/10W
R119	l-216-097-00	METAL	CHIP	100K 5%	1/10W
R120	1-216-693-11	METAL	CHIP	56K 0.5%	1/10W
R122	l-216-095-00	METAL	CHIP	82K 5%	1/10W
R123	1-218-754-11	METAL	CHIP	120K 0.50%	1/10W
R127	1-216-679-11	METAL	CHIP	15K 0.5%	1/10W
R128	1-216-693-11	METAL	CHIP	56K 0.5%	1/10W
R129	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R130	l-216-031-00	METAL	CHIP	180 5%	1/10W
R131	l-216-055-00	METAL	CHIP	1.8K 5%	1/10W
R132	l-216-095-00	METAL	CHIP	82K 5%	1/10W
R133	1-218-772-11	METAL	CHIP	680K 0.50%	1/10W
R136	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R138	l-216-085-00	METAL	CHIP	33K 5%	1/10W
R202	l-216-041-00	METAL	CHIP	470 5%	1/10W
R203	l-216-103-00	METAL	CHIP	180K 5%	1/10W
R204	l-216-107-00	METAL	CHIP	270K 5%	1/10W
R205	l-216-067-00	METAL	CHIP	5.6K 5%	1/10W
R206	l-216-059-00	METAL	CHIP	2.7K 5%	1/10W
R207	l-216-001-00	METAL	CHIP	10 5%	1/10W
R210	l-216-031-00	METAL	CHIP	180 5%	1/10W
R211	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R212	l-216-067-00	METAL	CHIP	5.6K 5%	1/10W
R213	l-216-057-00	METAL	CHIP	2.2K 5%	1/10W
R214	l-216-041-00	METAL	CHIP	470 5%	1/10W
R215	l-216-065-00	METAL	CHIP	4.7K 5%	1/10W
R217	l-216-037-00	METAL	CHIP	330 5%	1/10W
R218	l-216-045-00	METAL	CHIP	680 5%	1/10W

Ref. No.	Part No.	Description			Remarks
R219	l-216-049-00	METAL	CHIP	1K 5%	1/10W
R220	l-216-049-00	METAL	CHIP	1K 5%	1/10W
R222	l-216-057-00	METAL	CHIP	2.2K 5%	1/10W
R231	l-216-053-00	METAL	CHIP	1.5K 5%	1/10W
R232	l-216-035-00	METAL	CHIP	270 5%	1/10W
R233	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R234	l-216-049-00	METAL	CHIP	1K 5%	1/10W
R235	l-216-049-00	METAL	CHIP	1K 5%	1/10W
R239	l-216.-022-00	METAL	CHIP	75 5%	1/10W
R240	l-216-007-00	METAL	CHIP	18 5%	1/10W
R301	l-216-085-00	METAL	CHIP	33K 5%	1/10W
R302	l-216-079-00	METAL	CHIP	18K 5%	1/10W
R303	l-216-063-00	METAL	CHIP	3.9K 5%	1/10W
R304	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R305	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R306	l-216-109-00	METAL	CHIP	330K 5%	1/10W
R307	l-216-121-00	METAL	CHIP	1M 5%	1/10W
R308	l-216-663-11	METAL	CHIP	3.3K 0.5%	1/10W
R309	l-216-089-00	METAL	CHIP	47K 5%	1/10W
R310	l-216-089-00	METAL	CHIP	47K 5%	1/10W
R311	l-216-121-00	METAL	CHIP	1M 5%	1/10W
R312	l-216-049-00	METAL	CHIP	1K 5%	1/10W
R313	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R314	l-216-085-00	METAL	CHIP	33K 5%	1/10W
R315	l-216-025-00	METAL	CHIP	100 5%	1/10W
R316	l-216-091-00	METAL	CHIP	56K 5%	1/10W
R317	l-216-091-00	METAL	CHIP	56K 5%	1/10W
R318	l-216-101-00	METAL	CHIP	150K 5%	1/10W
R319	l-216-105-00	METAL	CHIP	220K 5%	1/10W
R320	l-216-067-00	METAL	CHIP	5.6K 5%	1/10W
R321	l-216-071-00	METAL	CHIP	8.2K 5%	1/10W
R325	l-216-107-00	METAL	CHIP	270K 5%	1/10W
R326	l-216-101-00	METAL	CHIP	150K 5%	1/10W
R329	l-216-085-00	METAL	CHIP	33K 5%	1/10W
R330	l-216-089-00	METAL	CHIP	47K 5%	1/10W
R331	l-216-093-00	METAL	CHIP	68K 5%	1/10W
R332	l-216-091-00	METAL	CHIP	56K 5%	1/10W
R335	l-216-689-11	METAL	CHIP	39K 0.5%	1/10W
R336	1-216-689-11	METAL	CHIP	39K 0.5%	1/10W
R338	l-216-065-00	METAL	CHIP	4.7K 5%	1/10W
R339	l-216-077-00	METAL	CHIP	15K 5%	1/10W
R340	l-216-077-00	METAL	CHIP	15K 5%	1/10W
R341	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R343	l-216-073-00	METAL	CHIP	10K 5%	1/10W
R391	l-216-093-00	METAL	CHIP	68K 5%	1/10W
R392	l-216-081-00	METAL	CHIP	22K 5%	1/10W
R402	l-216-171-00	METAL	GLAZE	75 5%	1/8W
R403-406	l-216-053-00	METAL	CHIP	1.5K 5	1/10W
R407	l-216-298-00	METAL	CHIP	2.2 5%	1/10W

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Ref. No.	Part No.	Description		Remarks
R408	l-216-298-00	METAL CHIP	2.2 5%	1/10W
R409	l-216-069-00	METAL CHIP	6.8K 5%	1/10W
R410	l-216-069-00	METAL CHIP	6.8K 5%	1/10W
R411	l-216-049-00	METAL CHIP	1K 5%	1/10W
R412	l-216-049-00	METAL CHIP	1K 5%	1/10W
R413	l-216-033-00	METAL CHIP	220 5%	1/10W
R414	l-216-033-00	METAL CHIP	220 5%	1/10W
R415	l-216-081-00	METAL CHIP	22K 5%	1/10W
R416	l-216-059-00	METAL CHIP	2.7K 5%	1/10W
R417	l-216-059-00	METAL CHIP	2.7K 5%	1/10W
R418	l-216-298-00	METAL CHIP	2.2 5%	1/10W
R419	l-216-079-00	METAL CHIP	18K 5%	1/10W
R420	l-216-079-00	METAL CHIP	18K 5%	1/10W
R421	l-216-089-00	METAL CHIP	47K 5%	1/10W
R422	l-216-057-00	METAL CHIP	2.2K 5%	1/10W
R423	l-216-065-00	METAL CHIP	4.7K 5%	1/10W
R424	l-216-065-00	METAL CHIP	4.7K 5%	1/10W
R501	l-216-311-00	METAL CHIP	6.8 5%	1/10W
R502	l-216-021-00	METAL CHIP	68 5%	1/10W
R503	l-216-049-00	METAL CHIP	1K 5%	1/10W
R504	l-216-089-00	METAL CHIP	47K 5%	1/10W
R505	l-216-081-00	METAL CHIP	22K 5%	1/10W
R506	l-216-065-00	METAL CHIP	4.7K 5%	1/10W
R507	l-216-105-00	METAL CHIP	220K 5%	1/10W
R606	1-218-772-11	METAL CHIP	680K 0.50%	1/10W
R607	1-218-766-11	METAL CHIP	390K 0.50%	1/10W
R608	1-216-689-11	METAL CHIP	39K 0.5%	1/10W
R609	1-216-689-11	METAL CHIP	39K 0.5%	1/10W
R610	1-216-675-11	METAL CHIP	10K 0.5%	1/10W
R613	l-216-099-00	METAL CHIP	120K 5%	1/10W
R614	l-216-099-00	METAL CHIP	120K 5%	1/10W
R617	1-218-764-11	METAL CHIP	330K 0.50%	1/10W
R618	1-218-772-11	METAL CHIP	680K 0.50%	1/10W
R620	l-216-073-00	METAL CHIP	10K 5%	1/10W
R621	l-216-025-00	METAL CHIP	100 5%	1/10W
R622	l-216-025-00	METAL CHIP	100 5%	1/10W
R623	l-216-073-00	METAL CHIP	10K 5%	1/10W
R624	l-216-071-00	METAL CHIP	8.2K 5%	1/10W
R625	l-216-059-00	METAL CHIP	2.7K 5%	1/10W
R626	l-216-049-00	METAL CHIP	1K 5%	1/10W
R627	l-216-049-00	METAL CHIP	1K 5%	1/10W
R628	l-216-089-00	METAL CHIP	47K 5%	1/10W
R629	l-216-119-00	METAL CHIP	820K 5%	1/10W
R633	l-216-009-00	METAL CHIP	22 5%	1/10W
R634	l-216-025-00	METAL CHIP	100 5%	1/10W
R635	l-216-001-00	METAL CHIP	10 5%	1/10W
R636	1-216-325-11	METAL GLAZE	110K 1%	1/10W
R637	l-216-109-00	METAL CHIP	330K 5%	1/10W
R638	l-216-097-00	METAL CHIP	100K 5%	1/10W
R639	1-216-693-11	METAL CHIP	56K 0.5%	1/10W

Refa No.t	N o .	Description		Remarks
R640	1-216-677-11	METAL CHIP	12K 0.5%	1/10W
R641	1-216-677-11	METAL CHIP	12K 0.5%	1/10W
R642	1-216-687-11	METAL CHIP	33K 0.5%	1/10W
R643	1-216-676-11	METAL CHIP	11K 0.5%	1/10W
R701	l-216-079-00	METAL CHIP	18K 5%	1/10W
R702	l-216-099-00	METAL CHIP	120K 5%	1/10W
R706	l-216-073-00	METAL CHIP	10K 5%	1/10W
R707	l-216-063-00	METAL CHIP	3.9K 5%	1/10W
R708	l-216-093-00	METAL CHIP	68K 5%	1/10W
R709	1-216-689-11	METAL CHIP	39K 0.5%	1/10W
R710	l-216-093-00	METAL CHIP	68K 5%	1/10W
R711	1-216-679-11	METAL CHIP	15K 0.5%	1/10W
R712	1-216-679-11	METAL CHIP	15K 0.5%	1/10W
R713	l-216-071-00	METAL CHIP	8.2K 5%	1/10W
R714	l-216-071-00	METAL CHIP	8.2K 5%	1/10W
R715	1-216-695-11	METAL CHIP	68K 0.5%	1/10W
R718	l-216-089-00	METAL CHIP	47K 5%	1/10W
R720	1-218-753-11	METAL CHIP	110K 0.50%	1/10W
R721	1-218-764-11	METAL CHIP	330K 0.50%	1/10W
R723	l-216-073-00	METAL CHIP	10K 5%	1/10W
R724	l-216-073-00	METAL CHIP	10K 5%	1/10W
R725	l-216-063-00	METAL CHIP	3.9K 5%	1/10W
R726	l-216-089-00	METAL CHIP	47K 5%	1/10W
R727	l-216-073-00	METAL CHIP	10K 5%	1/10W
R728	l-216-089-00	METAL CHIP	47K 5%	1/10W
R729	l-216-063-00	METAL CHIP	3.9K 5%	1/10W
R730	l-216-109-00	METAL CHIP	330K 5%	1/10W
R731	l-216-117-00	METAL CHIP	680K 5%	1/10W
R732	1-216-689-11	METAL CHIP	39K 0.5%	1/10W
R733	1-216-689-11	METAL CHIP	39K 0.5%	1/10W
R734-736	l-216-073-00	METAL CHIP	10K 5%	1/10W
R801	1-216-667-11	METAL CHIP	4.7K 0.5%	1/10W
R802	1-216-667-11	METAL CHIP	4.7K 0.5%	1/10W
R803	l-216-089-00	METAL CHIP	47K 5%	1/10W
R804	l-216-093-00	METAL CHIP	68K 5%	1/10W
R805	l-216-097-00	METAL CHIP	100K 5%	1/10W
R806	1-216-684-11	METAL CHIP	24K 0.5%	1/10W
R807	l-216-093-00	METAL CHIP	68K 5%	1/10W
R808	l-216-121-00	METAL CHIP	1M 5%	1/10W
R809	l-216-097-00	METAL CHIP	100K 5%	1/10W
R814	l-216-121-00	METAL CHIP	1M 5%	1/10W
R815	l-216-086-00	METAL GLAZE	36K 5%	1/10W
R816	l-216-095-00	METAL CHIP	82K 5%	1/10W
R817	l-216-095-00	METAL CHIP	82K 5%	1/10W
R818	l-216-073-00	METAL CHIP	10K 5%	1/10W
R819	l-216-073-00	METAL CHIP	10K 5%	1/10W
R820	l-216-08.1-00	METAL CHIP	22K 5%	1/10W
R821	l-216-025-00	METAL CHIP	100 5%	1/10W
R822	l-216-093-00	METAL CHIP	68K 5%	1/10W
R823	l-216-081-00	METAL CHIP	22K 5%	1/10W

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Ref.a No. t	N o .	Description		Remarks
R824-826				
	l-216-057-00	METAL CHIP	2. 2K 5%	1/10W
R827	l-216-049-00	METAL CHIP	1K 5%	1/10W
R828	l-216-049-00	METAL CHIP	1K 5%	1/10W
R829	l-216-073-00	METAL CHIP	10K 5%	1/10W
R832	l-216-025-00	METAL CHIP	100 5%	1/10W
R833	l-216-041-00	METAL CHIP	470 5%	1/10W
R844	l-216-053-00	METAL CHIP	1. 5K 5%	1/10W
R845	l-216-041-00	METAL CHIP	470 5%	1/10W
R846	l-216-057-00	METAL CHIP	2. 2K 5%	1/10W
R847	l-216-053-00	METAL CHIP	1. 5K 5%	1/10W

〈 VARIABLE RESISTOR 〉

RV101	l-238-093-11	RES, ADJ, CERMET	100K
RV102	l-238-093-11	RES, ADJ, CERMET	100K
RV103	l-238-092-11	RES, ADJ, CERMET	47K
RV104	l-238-092-11	RES, ADJ, CERMET	47K
RV201	l-238-089-11	RES, ADJ, CERMET	4. 7K
RV301	l-238-090-11	RES, ADJ, CERMET	10K
RV304	l-238-092-11	RES, ADJ, CERMET	47K
RV306	1-241-123-11	RES, ADJ, CARBON 47K	(HUE)
RV307	1-241-123-11	RES, ADJ, CARBON 47K	(BRIGHT)
RV308	l-238-092-11	RES, ADJ, CERMET	47K
RV309	l-238-092-11	RES, ADJ, CERMET	47K
RV401	l-223-468-11	RES, VAR, CARBON 10K/10K	(VOLUME)
RV602	l-238-089-11	RES, ADJ, CERMET	4. 7K

〈 SWITCH 〉

S101	1-571-478-11	SWITCH, SLIDE (TV BAND)
S102	l-554-088-00	SWITCH, KEY BOARD (-)
S103	l-554-088-00	SWITCH, KEY BOARD (+)
S104	l-554-088-00	SWITCH, KEY BOARD (CH CALL)
S601	l-554-061-00	SWITCH, SLIDE (TV POWER)

〈 FILTER 〉

SWF201	1-577-656-11	FILTER, CERAMIC (SAWF)	45. 7MHz

〈TRANSFORMER〉

T601	l-450-287-11	TRANSFORMER, DC-DC CONVERTER
T701	l-423-360-11	TRANSFORMER, DC/AC CONVERTER

〈 TUNER 〉

TU101	1-693-219-11	TUNER UNIT (TEPA5)

〈 VIBRATOR 〉

x301	l-567-505-1 1	OSCILLATOR, CRYSTAL	3. 579545MHz

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Ref. No.	Part No.	Description	Remarks
*	A-3016-405-A	R BOARD, COMPLETE	
		**********	
	3-669-480-21	+ PTPWH 2	
	3-714-118-01	SCREW (1.7X4)	
*	4-040-451-01	CHASSIS	
	4-040-452-01	KNOB, TU	
	4-040-453-01	GEAR (A)	
	4-040-534-01	DRUM, TUNING CAPACITOR	

〈 FILTER 〉

BPF10	l-235-171-00	FILTER, BAND PASS	

〈 CAPACITOR 〉

C10	l-163-031-11	CERAMIC CHIP	0. 01uF		5ov
C11	l-163-031-11	CERAMIC CHIP	0. 01uF		5ov
C12	l-163-117-00	CERAMIC CHIP	100PF	5%	5ov
C13	l-163-031-11	CERAMIC CHIP	0. 01uF		5ov
C14	1-124-245-71	ELECT	4. 7uF	20%	35v
C15	l-126-160-11	ELECT	1uF	20%	5ov
C16	l-163-135-00	CERAMIC CHIP	560PF	5%	5ov
C17	1-126-157-11	ELECT	10uF	20%	16V
C18	l-163-031-11	CERAMIC CHIP	0. 01uF		5ov
C19	1-124-589-11	ELECT	47uF	20%	16V
C20	l-163-031-11	CERAMIC CHIP	0. 01uF		5ov
C22	l-163-103-00	CERAMIC CHIP	27PF	5%	5ov
C23	l-163-096-00	CERAMIC CHIP	13PF	5%	5ov
C24	l-163-093-00	CERAMIC CHIP	10PF	5%	5ov
C25	l-163-009-11	CERAMIC CHIP	0. 001uF	10%	5ov
C26	1-126-157-11	ELECT	10uF	20%	16V
C27	l-163-085-00	CERAMIC CHIP	2PF		5ov
C28	l-163-137-00	CERAMIC CHIP	680PF	5%	5ov
C29	l-163-038-00	CERAMIC CHIP	0. 1uF		25V
C30	l-164-005-11	CERAMIC CHIP	0. 47uF		25V
c31	1-164-346-11	CERAMIC CHIP	1uF		16V
C32	l-163-037-11	CERAMIC CHIP	0. 022uF	10%	25V
c33	l-163-037-11	CERAMIC CHIP	0. 022uF	10%	25V
c37	l-124-234-00	ELECT	22uF	20%	16V
C38	l-163-096-00	CERAMIC CHIP	13PF	5%	50V

〈 FILTER 〉

CF10	l-567-097-61	FILTER, CERAMIC	10. 7MHz
CF11	l-567-097-61	FILTER, CERAMIC	10. 7MHz
CF12	l-567-177-00	FILTER, CERAMIC	455kHz

〈 VARIABLE CAPACITOR 〉

CV10-1-4 CT1-4	1-151-629-11	CAP, VAR, POLYETHYLENE (RADIO' TUNING)

〈 DIODE 〉

D10	8-719-105-57	DIODE	RD3. 9M
D11	8-719-988-78	DIODE	SB007W03Q

R

Ref. No.	Part No.	Description	Remarks
		< IC >	
IC10	8-752-061-79	IC CX20111	
IC11	8-759-804-98	IC LA3335M	
		< COIL >	
L10	l-402-594-21	ANTENNA, FERRITE-ROD (MW)	
L11	l-459-435-00	COIL (WITH CORE)	
L12	1-459-726-11	COIL (WITH CORE)	
L13	l-406-017-00	COIL, OSCILLATOR (MW)	
		< TRANSISTOR >	
Q11	8-729-805-45	TRANSISTOR 2SC3395	
Q12	8-729-216-22	TRANSISTOR 2SA1162	
Q13	8-729-216-22	TRANSISTOR 2SA1162	
		< RESISTOR >	
R11	l-216-073-00	METAL CHIP 10K 5% 1/10W	
R12	l-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R13	l-216-025-00	METAL CHIP 100 5% 1/10W	
R14	l-216-035-00	METAL CHIP 270 5% 1/10W	
R15	l-216-097-00	METAL CHIP 100K 5% 1/10W	
R16	l-216-025-00	METAL CHIP 100 5% 1/10W	
R19	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R21	l-216-073-00	METAL CHIP 10K 5% 1/10W	
R22	l-216-073-00	METAL CHIP 10K 5% 1/10W	
R27	l-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R29	l-216-073-00	METAL CHIP 10K 5% 1/10W	
R30	l-216-073-00	METAL CHIP 10K 5% 1/10W	
R31	l-216-041-00	METAL CHIP 470 5% 1/10W	
R32	l-216-041-00	METAL CHIP 470 5% 1/10W	
		< VARIABLE RESISTOR >	
RV10	1-238-367-11	RES, ADJ, CARBON 20K	
		< SWITCH >	
S10	1-571-478-11	SWITCH, SLIDE (RADIO BAND)	
		< TRANSFORMER >	
T10	l-404-444-31	TRANSFORMER, IF 455kHz	

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Ref. No.	Part No.	Description	Remarks
		MISCELLANEOUS	
		**********	
52	l-809-878-11	INDICATOR MODULE	
53	l-751-406-11	CABLE, FLAT (16 CORE)	
55	1-517-125-21	GAS DISCHARGE TUBE,FLUORESCENT	
ANT101	l-501-608-11	ANTENNA, TELESCOPIC	
SP401	1-504-154-11	SPEAKER (3.6CM)	

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ACCESSORIES & PACKING MATERIALS

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⚠	1-467-129-11	ADAPTOR, AC (AC-E703)	
*	3-704-276-01	BAG, (STANDARD), PROTECTION	
	3-757-167-21	MANUAL, INSTRUCTION (ENGLISH)	
*	3-768-854-21	CARD, WARRANTY	
*	4-040-448-01	CUSHION	
*	4-040-449-01	INDIVIDUAL CARTON	
	4-040-533-01	PORCH	
	X-4031-154-1	BASE ASSY, HOOD	

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HARDWARE LIST

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#1	7-621-772-30	SCREW +B 2X6
#2	7-682-547-09	SCREW +B 3X6
#3	7-622-205-05	NUT M2 TYPE2
#4	7-685-106-19	SCREW +P 2X10 TYPE2 NON-SLIT
#5	7-688-003-12	W 3, MIDDLE
#6	7-623-952-01	WASHER 2.0, FIBER

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

9-957-905-11

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